OZ-9600 II
IQ-9200

SHARP SERVICE MANUAL

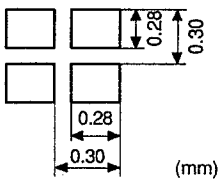
CODE: 00ZOZ96002SME

OZ-9600II
MODEL IQ-9200

STANDARD FUNCTION
10 digits 1 M

DISPLAY SECTION

ELEMENT:	FSTN LCD
DISPLAY:	320 x 240 dot matrix liquid crystal display



LSI

CPU:	LH58061M
Display:	LF7713Q
RTC:	SMC5245

POWER SUPPLY
AC: X DC: O
Main power supply: 6 Vdc Alkaline batteries (LR03 x 4)
Memory backup power: 3 Vdc lithium battery (CR2032 x 1)

POWER CONSUMPTION
0.31 W

AUTO POWER OFF TIME
12 minutes

MEMORY PROTECT
Yes

DIMENSIONS(mm)
Open: 180(W) x 210(D) x 14.2(H) mm. 7-3/32"(W) x 8-9/32"(D) x 9/16"(H)
Closed: 180(W) x 105(D) x 25.4(H) mm. 7-3/32"(W) x 4-1/8"(D) x 1"(H)

Weight
Approx. 430g

CALCULATIONS
Functions: addition, subtraction, multiplication, division; constant, square root, percent, memory calculation, date calculation, paperless printer.
Digits: 10 digits

Serial input/output

Type of transmission:	Asynchronous half-duplex/fullduplex
Transmission speed:	300, 600, 1200, 2400, 4800, 9600 bps
Parity bit:	even, odd, none
Word length:	7 or 8 bits
Stop bit:	1 or 2 bits
Connector used:	15-pin connector
Output signal level:	C-MOS level (4 to 6 volts)
Interface signals:	Input; RD, CS, CD, DR, CI
	Output; SD, RS, RR, ER
	Other; SG, VC, FG

Operating temperatures
0°C to 40°C (32° to 104°F)

Peripherals and transfer interface

IR transfer	Up to a distance of approx. 80 cm.
Cable jack	15-pin
IC card slot	1

Electronic Organizer notebook section

Applications	Calendar, Schedule, To Do, Anniversary, Telephone, User File, Notebook, Outline, Scrapbook, Filter
Memory capacity	512 Kbytes (User area: Approx. 381 Kbytes) Schedule application capacity: Approx. 6,730 entries consisting of an averge of 32 charactes Tel application capacity: Approx. 6,610 entries consisting on averge of 16 charactes in the name field and 12 in the number field These capacities only apply when all the available memory is committed to a single function.
Maximum data size per entry	Notebook: 16 Kbytes Outline: 32 Kbytes for an entire outline 2 Kbytes for each topic Tel/User File: 2 Kbytes for text data 61.7 Kbytes for graphics data Other applications: 2 Kbytes
User interfaces	Touch panel, keyboard
Other features	Secret function, data transfer, search

Clock

Crystal oscillation frequency:	32,768 Hz
Clock precision:	Average variance per day, 1.5 seconds (at 25°C/77°F)
Content of displays:	year, month, day, day of week, hours, minutes, A.M./P.M., city names
Time system:	12-hour and 24-hour clock
World clock function:	Display of date and time for the world's cities. Enable/disable daylight saving time display function.

Operating time
Battery life may vary depending on usage.
Operating batteries:
When alkaline batteries are used:
- Approx. 80 hours (2.5 months of 1 hour continuous use per day)
  Continuous display at an ambient temperature of 20°C (68°F)
- Approx. 70 hours (2 months of 1 hour continuous use per day)
  Searching data for 5 minutes and display on for 55 minutes per hour, at an ambient temperature of 20°C (68°F)

The battery life may be shorter than the above when manganese batteries are used.
Memory backup battery:
Approx. 5 years (regardless of the condition of the operating batteries)

Accessories
Alkaline batteries (LR03 x 4)
Lithium batteries CR2032 (installed)
Touch pen, Operation manual, protection card

Parts marked with "⚠" is important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

SHARP CORPORATION

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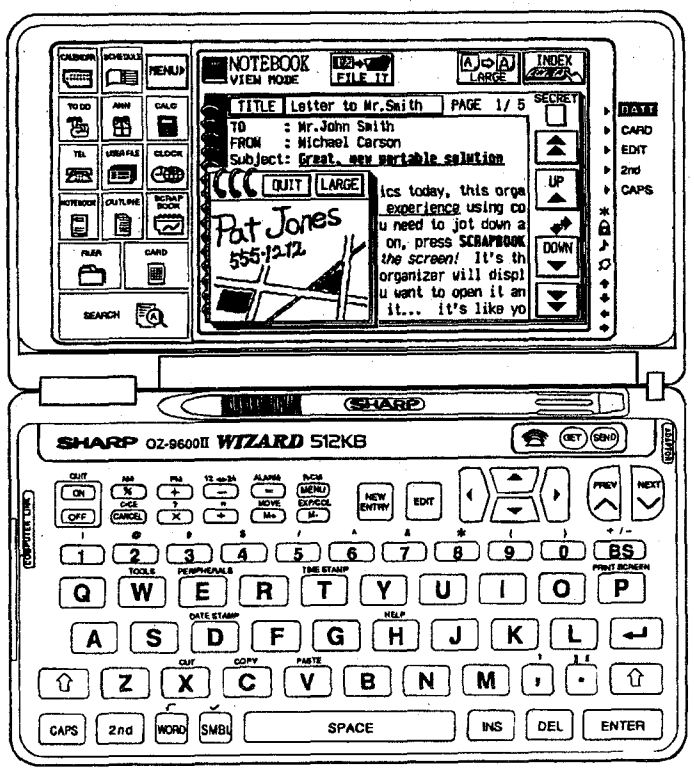
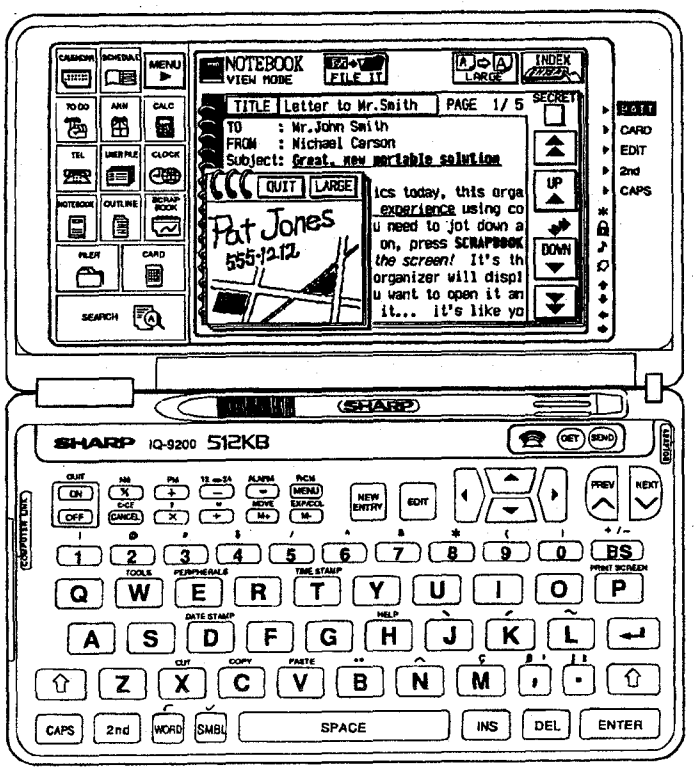
The contents are subject to change without notice.

KEY LAYOUT

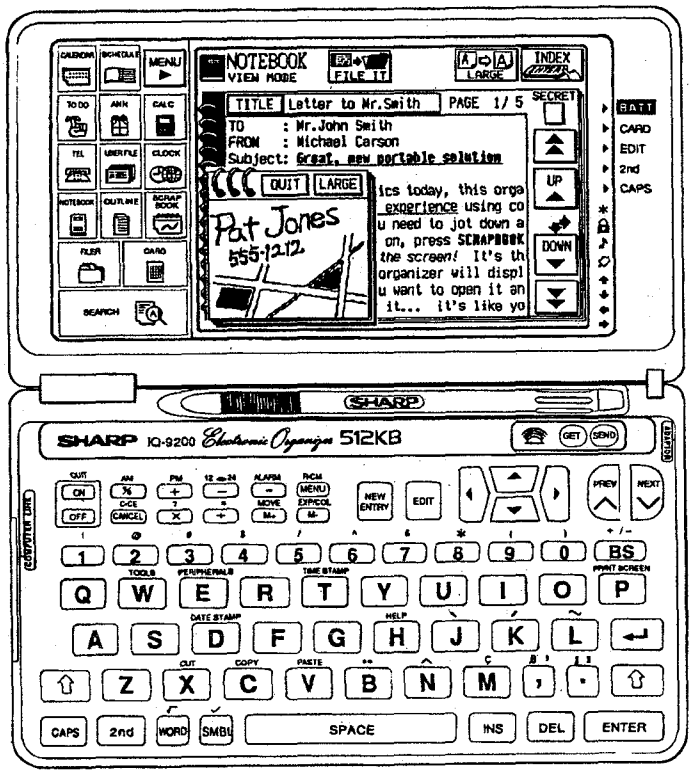
① USA (OZ9600II)



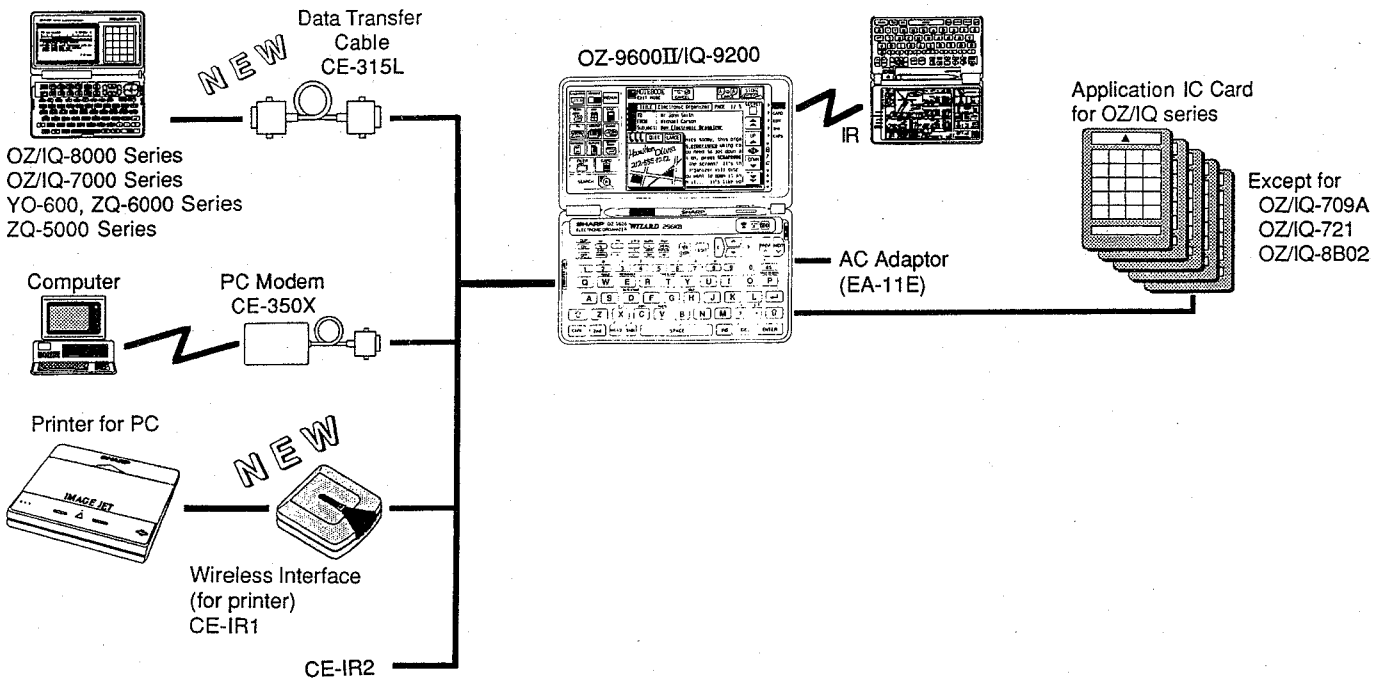
② UK (IQ-9200)



③ Except USA, UK (IQ-9200)



1. OZ-9600II, IQ-9200 SYSTEM CONFIGURATION



2. HARD WARE DESCRIPTION

1. Block diagram

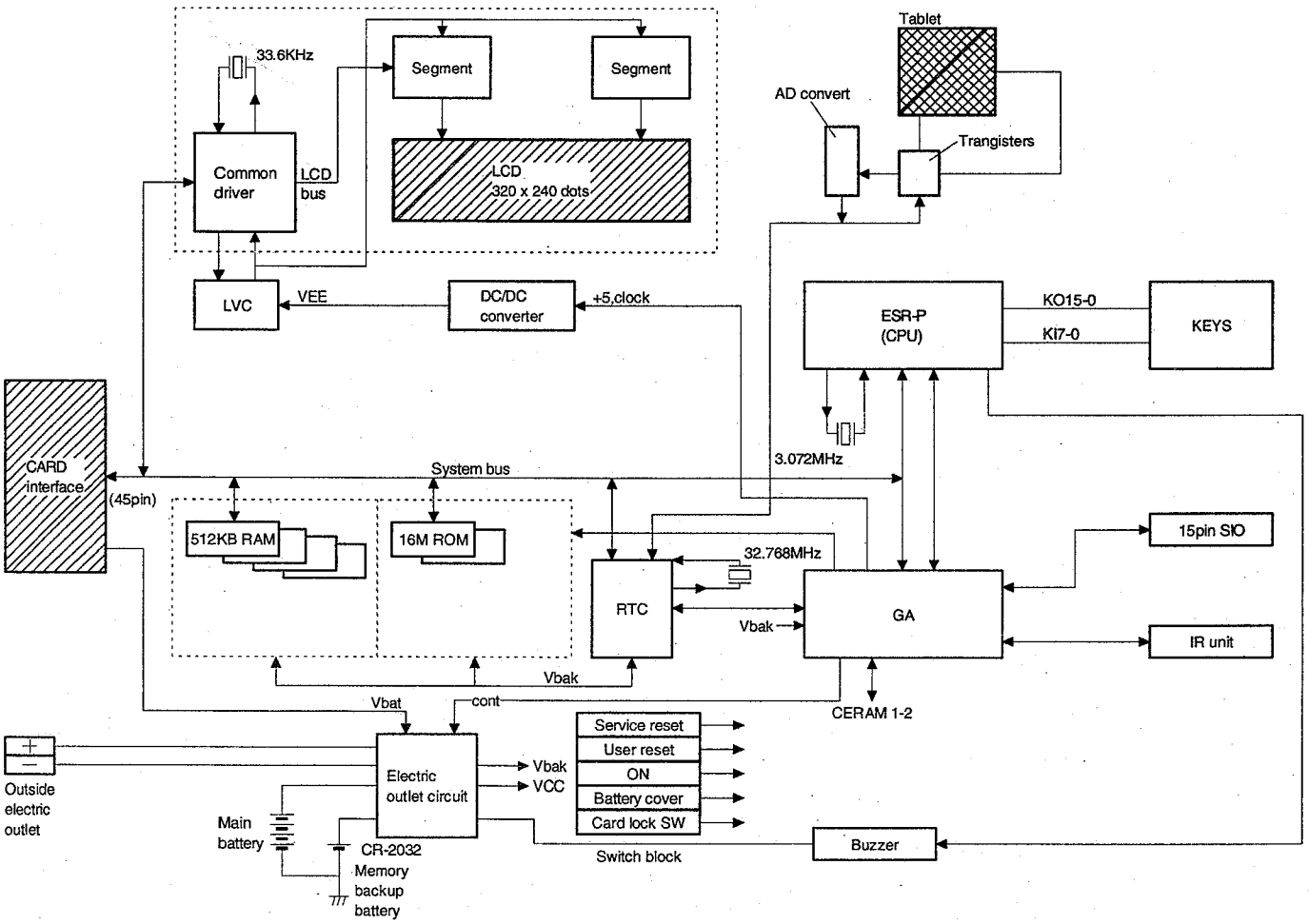


Fig. 1

2. Description of LSI

2-1. CPU (LH58061M)

1) Introduction

① CMOS process

② 8-bit CPU (operand at 8 bits)

③ Firmware ROM (decoder)

④ 240 bytes RAM

⑤ I/O port

(Input)	Key input	x 8
	System control input	x 3
	CMT input	x 1
	UART input	x 1
	General purpose input port	x10
(Output)	Key output	x16
	Address output	x21
	Chi enable output	x 9
	LCD driver control output	x 1
	Memory control output	x 2
	Sub-clock output	x 1
	CMT output	x 1
	UART output	x 1
	General purpose output port	x10
(Input/output)	Data input/output	x 8
(Others)	Power supply line	x 3
	Oscillator line	x 4

⑥ Internal circuit
Oscillator circuitMain, subsidiary (for timer)x2
Reset circuit
UART

⑦ Supply voltage3.8V~6.0V

⑧ Operating temperature range-5~55ºC

⑨ Not the bit slice microprocessor.

⑩ No arithmetic function for data above 8 bits.

⑪ No multiply instruction capability.

⑫ Does not contain ROM type internal memory ROM.

⑬ 100-pin TQFP (flat plastic package)

⑭ No radiation protective design provided.

2) Block diagram

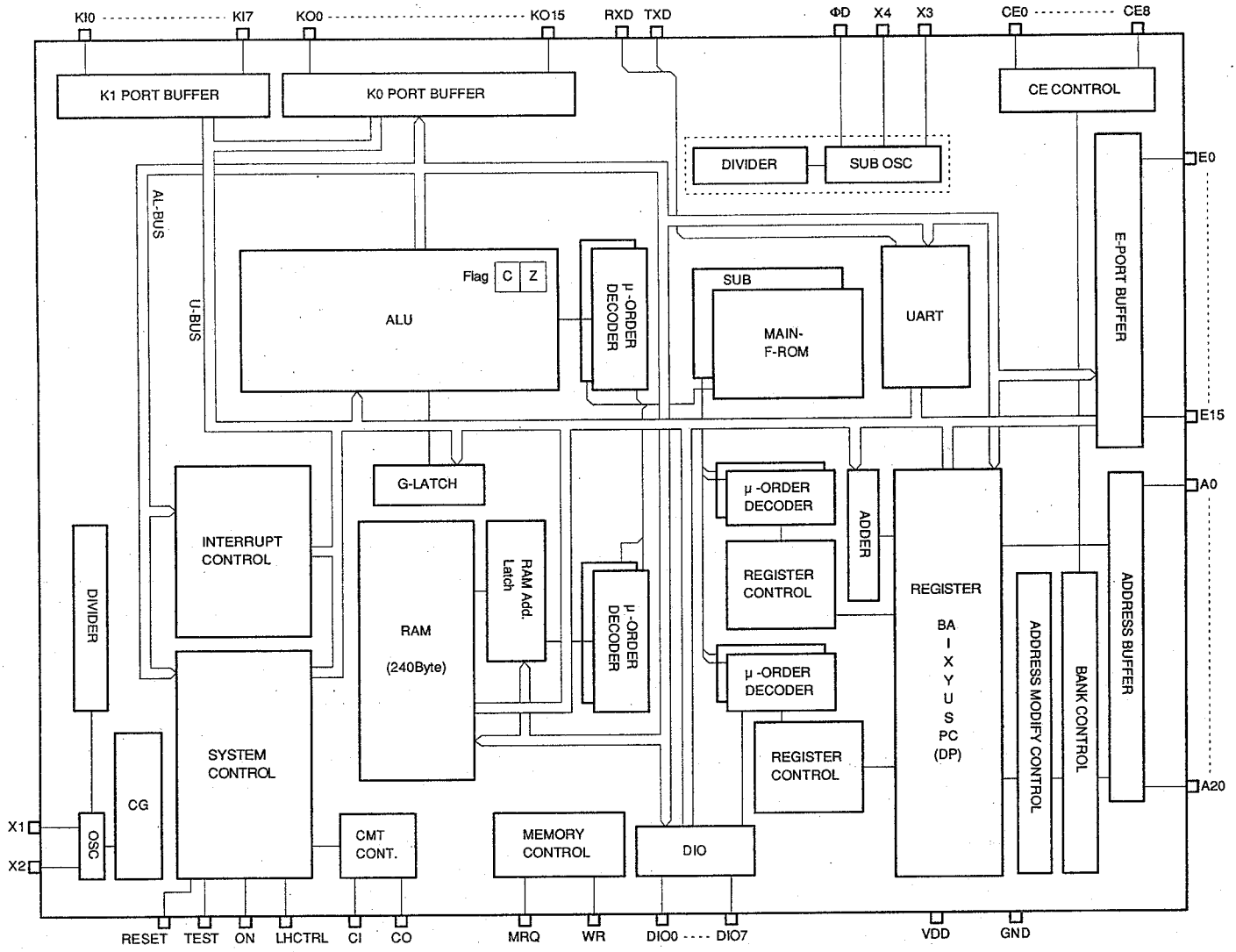
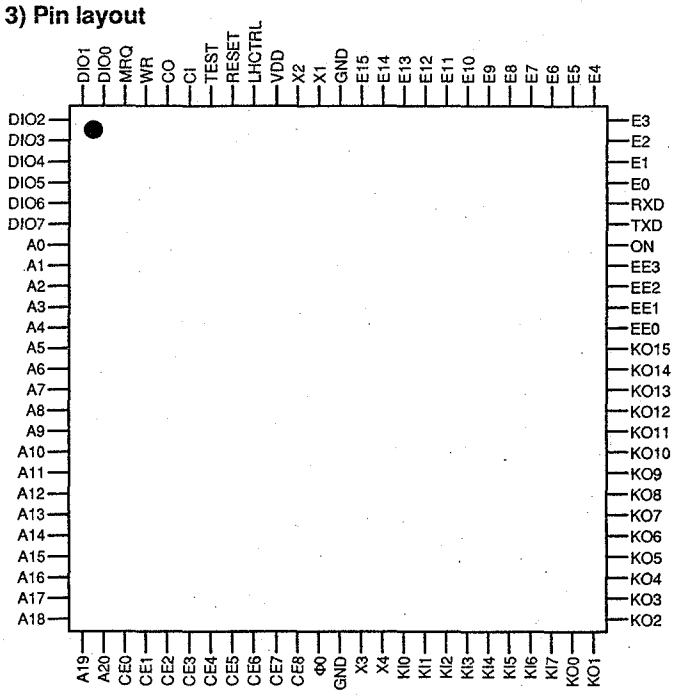


Fig.2 LH5806AM block diagram

3) Pin layout


DIO1 DIO0 MRQ WR CO CI TEST RESET LHCTRL VDD X2 X1 GND E15 E14 E13 E12 E11 E10 E9 E8 E7 E6 E5 E4
DIO2 DIO3 DIO4 DIO5 DIO6 DIO7 A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 A16 A17 A18
E3 E2 E1 E0 RXD TXD ON EE3 EE2 EE1 EE0 KO15 KO14 KO13 KO12 KO11 KO10 KO9 KO8 KO7 KO6 KO5 KO4 KO3 KO2
A19 A20 CE0 CE1 CE2 CE3 CE4 CE5 CE6 CE7 CE8 ΦD GND X3 X4 KI0 KI1 KI2 KI3 KI4 KI5 KI6 KI7 KO0 KO1

CE3 Not used

Fig.3 Pin layout

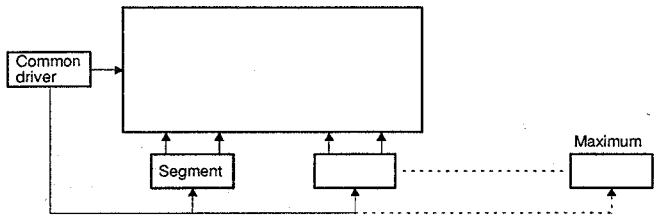
4) Pin assignment

Pin No.	CPU signal name	Circuit signal name	I/O	At OFF	At RST	At HLT	ACTV	Function
99. 100. 0~6	DIO-DIO7	D0-D7	I/O	Weak, high	Weak, high	Weak,high	H	Data bus
7~27	A0-A20	A0-A20	O	L	L	L	H	Address bus
28.29	CE0.CE1	EXCED,CEIN	O	H	H	H	L	Card I/O & ROM select, RAMCE1
30	CE2	CE2	O	L	L	L	H	Card RAM select-1
35	CE7	CE7	O	H	H	H	L	Card ROM select, system ROM select
33	CE5	CE5	O	L	L	L	H	Card RAM select-2
34	CE6	CE6	O	H	H	H	L	Main ROMCE
32	CE4	LCD	O	L	L	L	H	Peripheral I/O select
36	CE8	CE8	O	H	H	H	L	RAMCE2
37	ϕD	ϕD	O	L	L	L	H	D/D control clock, 40KHz
39, 40	X3, X4	X3, X4	O. I					For sub-logic oscillation
41~48	K10-K17	K10-K17	I				H	Key input signal (PD)
49~64	KO0-KO15	KO0-KO15	O	L	L	L	H	Key output signal (PD)
65	EE0	EE0	O	L	L	L	H	For LVC control
66	EE1	NU	O	L	L	L	H	Not used.
67	EE2	N. U	O				H	Not used.
68	EE3	ϕLDG	O	L	L	L	H	LCD timing signal, 3MHz
69	ON	ON	I					On key input interrupt
70	TXD	SD	O	SOFT	L	SOFT	H	15 pin send data
71	RXD	RD	I				H	15 pin receive data
72	E0	SELECT	O	Not predictable	Not predictable	SOFT	H	For 15 pin
73	E1	NU	I				H	Not used
74	E2	S2	O	Not predictable	Not predictable	SOFT	H	Card recognition strobe output
75	E3	ROM BANK	O	Not predictable	Not predictable	SOFT	H	ROM bank, main
76	E4	ALRMO	I				H	Interrupt signal from RTC
77	E5	TBINT	I				H	Interrupt from tablet
78	E6	UNLOCK	I				H	Lock switch interrupt signal
79	E7	NU	I				H	Not used.
80	E8	RS	O	SOFT	Not predictable	SOFT	H	For 15 pin
81	E9	ER	O	SOFT	Not predictable	SOFT	H	For 15 pin
82	E10	CD	I					For 15 pin
83	E11	DR	I					For 15 pin
84	E12	CTS	I					For 15 pin
85	E13	BELL0	I				H	15 pin startup input
86	E14	NU	I				H	Not used.
87	E15	CARD OE-	O	SOFT	Not predictable	SOFT	H	Card output enable
89, 90	X1, X2	X1, X2	I/O					For system clock oscillation
92	VDD	LHCTRL(VDD)	O	L	H	H	H	For LCD control (not used)
93	RESET	RESET	I				H	Reset input (PD)
94	TEST	TEST	I				H	Test pin (GND connected)
95	CI	S2	I					Card recognition external PD
96	CO	BUZZER	O	L	L	L	H	Beeper output signal
97	WR	R/W	O	H	H	H	L	Memory I/O write pulse
98	MRQ	MRQ	O	H	H	H	L	Memory request (not used)
38, 88	GND	GND	–					Reference voltage
91	VDD	VCC	–					No backup power supply, VCC

2-2. LCD driver (LH1552F, LH1553F)

1) Introduction

The LCD driver consists of six segment driver (LH1552F) and a common driver (LH1553F). The common driver has 240 internal driver circuits and operates under the display duty of 1/240. The segment driver has 168 internal driver circuits.
To abate the CPU load, connection is made only to the common driver, and the common driver transfers data with a several (8 maximum) segment drivers. The 8-bit display data received from the CPU are sent to the common driver, and sent the segment display RAM after completing processing within the common driver.



Ⓐ Instructions

① Window function: Allows to setup a maximum 16 windows.

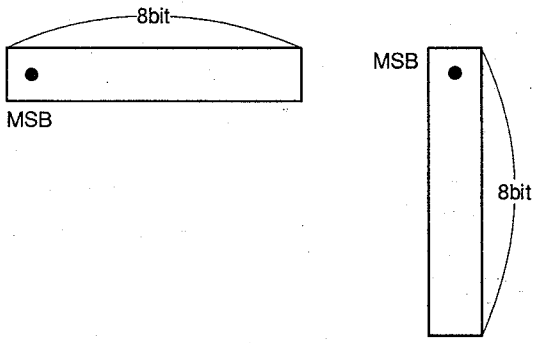
② Data block transfer function: Used to write continuing data and to send data blocks.

③ Four rules of arithmetic operation: Four rules of arithmetic operation of write data with LCD display data (loop instruction), SET, AND, OR, EXOR, and NOT operation (inverse).

④ Masking: Masks the write and read data.

⑤ Automatic address increment and decrement functions: Can independently increment or decrement 1 to 8 automatically towards direction X or Y after accessing the write or read address.

⑥ Vertical write and horizontal write: Data may be accessed vertically or horizontally.
For vertical direction, the MSB is for 8 bits on a column.
For horizontal direction, the MSP is for 8 bits on a row.



⑦ Internal droop circuit: To prevent a drooping phenomenon, the FRM frequency can be varied.

⑧ Address conversion feature: When an absolute address is accessed by the CPU, the common driver distinguishes to which segment driver to be addressed, and converts it to the absolute address for accessing.

Ⓑ Common driver

- Common output impedance: 3.0KΩ, maximum.
- Internal common LCD display drive circuit: 240 circuits.
- Window RAM capacity: 688 bits.

Ⓒ Segment driver

Segment output impedance: 3.0KΩ, maximum.

- Direct display of RAM data by the internal display RM
- Data high: Bit active
- Data low: Bit inactive
- Display RAM capacity: 240 x 168 = 40320 bits (5040 bytes)
- Internal segment LCD display drive circuit: 168 circuits
- Display duty: 1/240

Ⓓ CMOS process

Ⓔ Power supply

GND = 0VVcc (logic) = 3.8V~6.5V
VEE (LCD) = 10.0~30.0v

Ⓕ PKG

Segment: 217 pins, tab film
Common: 325 pins, tab film

2) Block diagram (LH1552F segment driver)

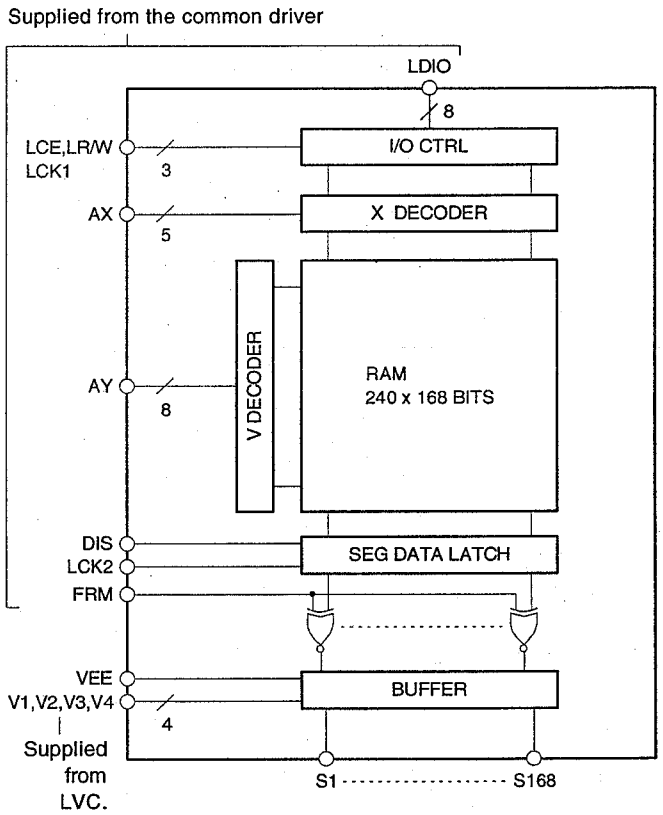


Fig.4 LH1552F block diagram

3) Block diagram (LH1553F common driver)

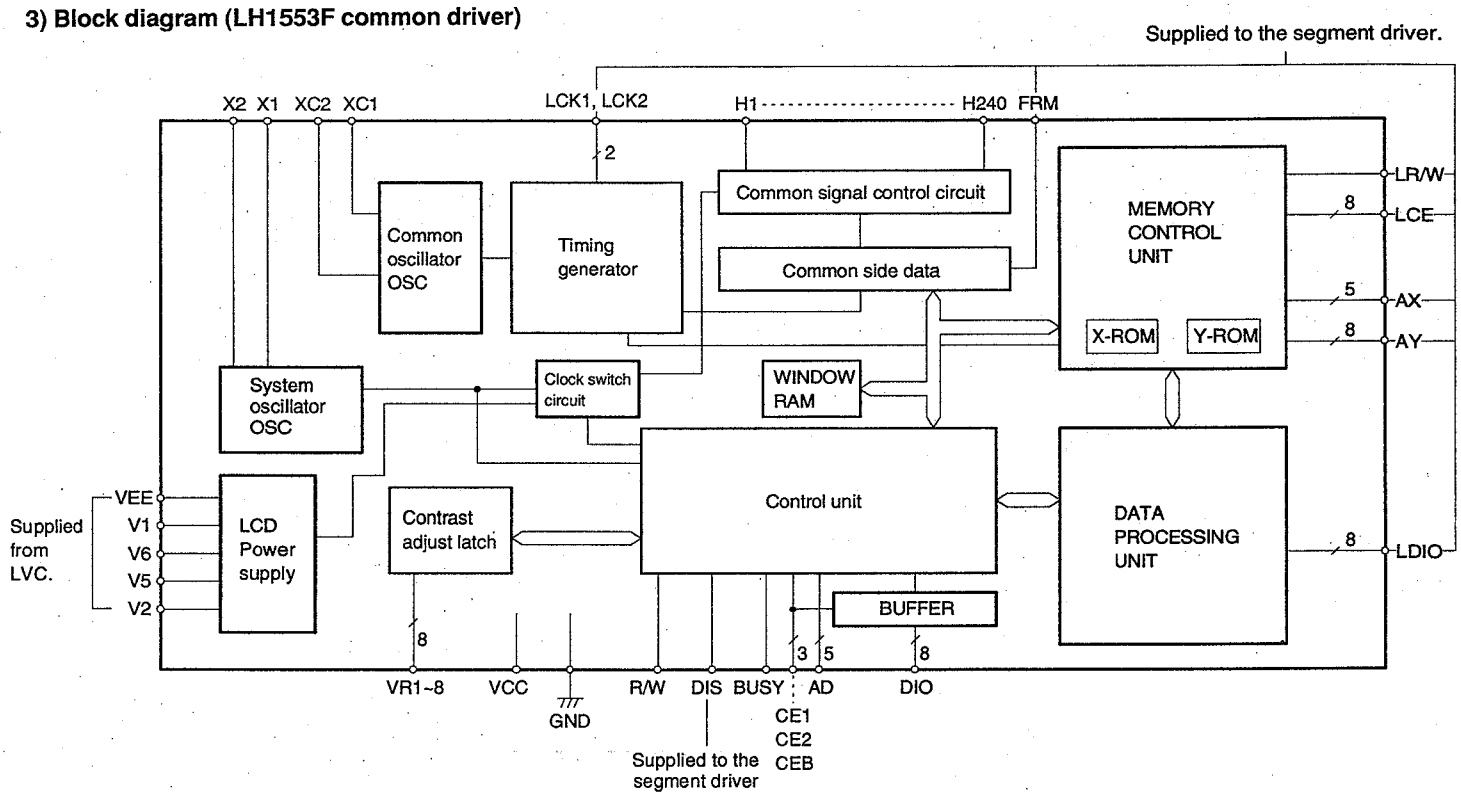


Fig.5 LH1553F block diagram

4) Common driver (LH1553F) pin description

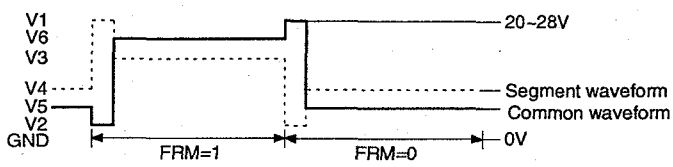
GND	GND
V2 V5 V6 V1	Display drive power supply
GND2	GND
XC1 XC2	utput Input LCD clock
GND3	GND
TEST2 TEST1	Test pin
DIS	Display off control output
FRM	Frame signal
LRW	Segment data read/write signal (segment to segment)
LCK1 LCK2	Display clock
LCE8 LCE7 LCE6 LCE5 LCE4 LCE3 LCE2 LCE1	Segment local chip enable output (for segment)
LDIO7 LDIO6 LDIO5 LDIO4 LDIO3 LDIO2 LDIO1 LDIO0	Segment to segment local data bus: Output
AY 7 AY 6 AY 5 AY 4 AY 3 AY 2 AY 0	Segment to segment local address LCD screen display address (absolute), direction Y
AX4 AX3 AX2 AX1 AX0	Segment to segment local address LCD screen display address (absolute), direction X

GND	GND
DIO7 DIO6 DIO5 DIO4 DIO3 DIO2 DIO1 DIO0	CPU to data bus input/output
AD5 AD4 AD3 AD2 AD1 AD0	CPU to address bus input
CE1 CE2 CEB	CPU chip enable signal CE1 and CE2: Active high CEB, Active low
BUSY	Busy signal output
RWB	CPU read/write signal
VR8 VR7 VR6 VR5 VR4 VR3 VR2 VR1	Contrast preset (with LVC) These 8 bits data determine the LVC LCD drive voltage.
STB	A high on STB shorts between LCD drive voltage VEE and GND using 3K resistor.
VCC	Logic power supply
X1 X1	Output Input Lock clock
X2	
VCC	Logic drive power supply
V1 V6 V5 V2 VEE	Display drive power supply
H1~H240	Common

5) Segment drive (LH1552F) pin description

PN	Signal name	Function
1~168	S1~S168	Segment output
169	GND	Display GND
170 171 172 173 174	VEE V2 V4 V3 V1	Display drive power supply
175	VEE	Display drive power supply
176	GND	GND
177	VCC	Logic drive power supply
178 179 180 181 182	AX0 AX1 AX2 AX3 AX4	Common to common local address LCD screen display address Direction X (absolute)
183 184 185 186 187 188 189 190	AY0 AY1 AY2 AY3 AY4 AY5 AY6 AY7	Common to common local address LCD screen display address Direction Y (absolute)
191 192 193 194 195 196 197 198	LDI07 LDI06 LDI05 LDI04 LDI03 LDI02 LDI01 LDI00	Common to common local data bus Input/output
199	$\overline{LCE}$	Local to local, local chip enable input
200 201	LCK1 LCK2	Display clock (common to common)
202	LR/$\overline{W}$	Segment data read/write signal (common to common)
203	FRM	Frame signal
204	DIS	Display off control input
205	MIRROR	Mirror reflect input
206 207	TEST1 TEST2	Test pin
208	GND	GND
209	VCC	Logic drive power supply
210	GND	GND
211	VEE	Display drive power supply
212 213 214 215	V1 V3 V4 V2	Display drive power supply
216	VEE	Display drive power supply
217	GND	GND

6) LCD driver waveforms



SEGMENT

Input	FRM	Level
1	1	V1
0	1	V3
1	0	V2
0	0	V4

COMMON

Input	FRM	Level
1	1	V2
0	1	V6
1	0	V1
0	0	V5

2-3. RTC (SMC5245)

1) Pin layout

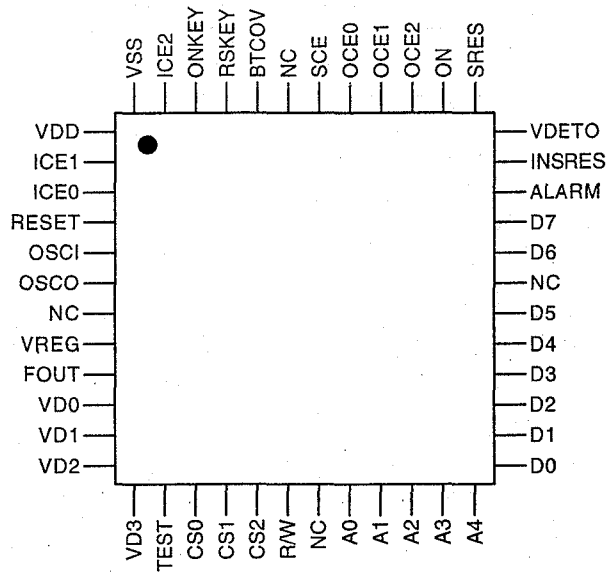


Fig.6 SMC5245 pin layout

2) Pin description

No.	Signal name	I/O	Function
1	VDD	–	Supply voltage
2	ICE1	I	Not used.
3	ICE0	I	Not used.
4	RESET	I	Reset terminal
5	OSCI	I	Crystal oscillator connect pin
6	OSCO	O	Crystal oscillator connect pin
7	NC	–	Not used.
8	VREG	O	Internal low voltage output regulation capacity connect pin
9	FOUT	O	Frequency output pin
10	VD0	I	Voltage monitor pin
11	VD1	I	Voltage monitor pin
12	VD2	I	Voltage monitor pin
13	VD3	I	Voltage monitor pin
14	TEST	I	Test pin
15	CS0	I	Chip select pin
16	CS1	I	Chip select pin
17	CS2	I	Chip select pin
18	R/W	I	Read/write pin
19	NC	–	Not used.
20	A0	I	Address bus
21	A1	I	Address bus
22	A2	I	Address bus
23	A3	I	Address bus
24	A4	I	Address bus
25	D0	I/O	Data bus
26	D1	I/O	Data bus
27	D2	I/O	Data bus
28	D3	I/O	Data bus
29	D4	I/O	Data bus
30	D5	I/O	Data bus
31	NC	–	Not used.
32	D6	I/O	Data bus
33	D7	I/O	Data bus
34	ALARM	O	Interrupt output pin
35	INSRES	I	Reset input pin
36	VDETO	O	VDD output monitor pin
37	SRES	O	Reset output pin
38	ON	O	ON key output pin
39	OCE2	O	WR output pin
40	OCE1	O	Not used.
41	OCE0	O	Not used.
42	SCE	O	D battery protection control pin
43	NC	–	Not used.
44	BTCOV	I	Battery replace pin
45	RSKEY	I	Reset switch
46	ONKEY	I	ON key input pin
47	ICE2	I	WR input pin
48	VSS	–	Power supply

3) Introduction

The SMC5245 is a calendar combined real time clock. It has a basic frequency of 32,768Hz generated from a crystal oscillator to produce second, minute, hour, day, day of week, month, and year. It has an automatic leap year interrogating feature of the world calendar, cyclic interrupt feature, 2-channel alarm feature, and a 4-channel external voltage detect feature.
For interfacing with a microcomputer, it uses 8-bit data bus, 5-bit address bus, 3-bit chip select and read/write signals, allowing to set time, alarm, interrupt and to read time, interrupt cause, and voltage detect result.
A part of the oscillation circuit and the frequency divider are driven by a low voltage for a low power consumption.

4) Features

① High speed CPU interface by means of 8-bit data bus.

② Internal time counter (second, minute, hour) and calendar (day, day of week, month, year).

③ Internal automatic leap year recognition feature

④ Internal 2-channel alarm feature with a wild card feature

⑤ Internal cyclic interrupt feature (day, hour, minute, second, 1/2 second)

⑥ Internal 4-channel external voltage detect circuit

⑦ Low power dissipation using the CMOS technology and the voltage regulator

⑧ Internal 32.768Hz crystal oscillator

5) Pin functions

① D0~D7: 8-bit data bus
These are bidirectional data bus that connected with the microcomputer data bus and used to read/write counters and registers. The data bus is at a high impedance except when CS0~CS2 is active and R/W is at a high.

② A0~A4: 5-bit address bus
These are address input lines that are within the microcomputer address bus and used to assign read/write counters and registers.

③ CS0~CS5: 5-bit address bus
These are chip select lines used to set active and inactive the IC. Normally, address decoded signal is connected. CS0 is an active low signal. CS1 and CS2 are active high or low that can be selected by masking. The IC becomes active when the 3-bit select line has turned active.

④ Read/Write pin
The contents of the counter and the register designated in address A0~A4 at HIGH level are outputted to the data bus. Writing is performed at LOW level. When CS0~CS2 are non-active, neither read nor write can be made.

⑤ ALARM interrupt output pin
Cyclic interrupt, alarm interrupt, and voltage detect interrupt are informed to the external source. With a mask option, active low or high state can be selected. Only the software can be assigned to set this line for set active or inactive. These lines are not affected by CS0~CS2.

⑥ FOUR frequency output pin
The frequency of 32Hz is sent onto this output line for step adjustment of the clock.

⑦ OSC1, OSC0 crystal oscillator connect pin
These are pins connected with the 32,768 crystal oscillator.

⑧ VD0~VD3 detect voltage pin
These are input lines used to monitor external voltage.

⑨ Pin numbers 2, 3, 35~48 (QFP, 48 pins) user circuit i/o pins
Input/output pins used for the user circuit.

⑩ VDD, VSS power supply pin
These lines are used to supply power.

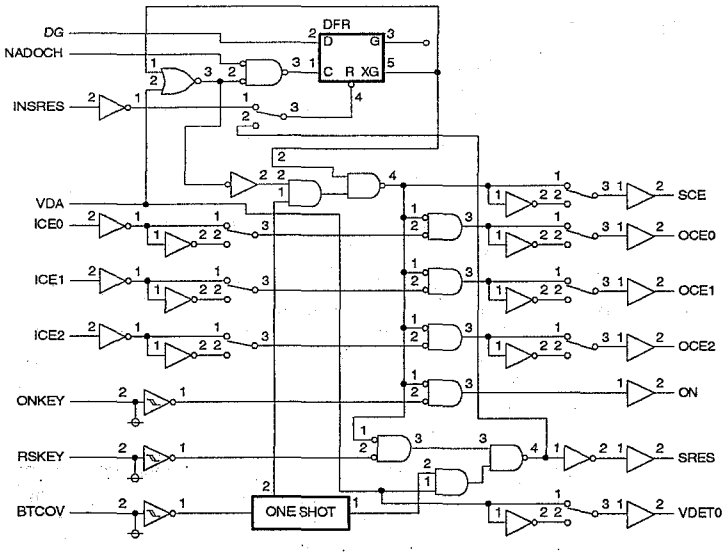
⑪ VREG internal low voltage output regulation capacitor connect pin
A 0.1μ capacitor is connected across VREG and VSS.

⑫ RESET reset pin
This line is used to initialize the IC. A high on this line initializes all register contents. In addition to this function, it also has an internal power-on-reset circuit. The reset is OR'ed with the power-on-reset circuit. Internal pulldown is not provided on the reset line.
NOTE: The power-on-reset circuit may not start active depending on how the power is turned on.

⑬ TEST test pin
Only Seiko Epson may provide it for test of the IC. Normally, it is internally pulled down. It is suggested to connect with VSS externally.

6) User circuit

The user circuit consists of 14 input/output lines. ONKEY, RSKEY, and BTCOV lines are Schmitt trigger inputs that normally pulled down internally.
The one-shot circuit issues a high level signal (normally low) to the 8/512~9/512 one-shot circuit at a high to low transition of the BTCOV line. The one-shot circuit has a trigger. The one-shot circuit output-2 has a delay of 1/2024~3.1024 second and continues to sent high level until the BTCOV line becomes high (normally low).
The VDA signal is an output from the voltage detector A. A high level signal is issued when normal (voltage found). This signal is at a high at a time of initialization. The NADOCW signal is an active low address 0CH write signal. The DFR signal is a register of a user bit that sends the input level of D to Q at a low to high transition of signal. When a low level signal is received by R, the DFR is reset with a low level signal sent to Q. (XQ is an invert output of Q).



2-4. System gate array (LZ95G33)

1) Brief functional description

① Memory decode
Used to decode the system ROM, RAM, and IC card memories that produces a chip select signal for each assigned device.

② Write pad interface
Has an interface circuitry with the handwrite pad.

③ Optical communication interface
Not only switches the CPU serial port to a normal 15-pin port from the optical communication, it also modules the optical communication.

④ CDROM interface
Not only switches the normal serial port from the CDROM, it also switches the CDROM drive, and it controls the communication with the CDROM drive.

⑤ Tablet control
Used to control the tablet input and the A/D converter.

⑥ Memory protect
The memory is protected using an external voltage detect IC.

⑦ EEPROM control
Used to control the EEPROM access, and has a function to replace a part of ROM to a part of the EEPROM.

⑧ Used to generate clocks and low battery signal cut out function.

2) Block diagram

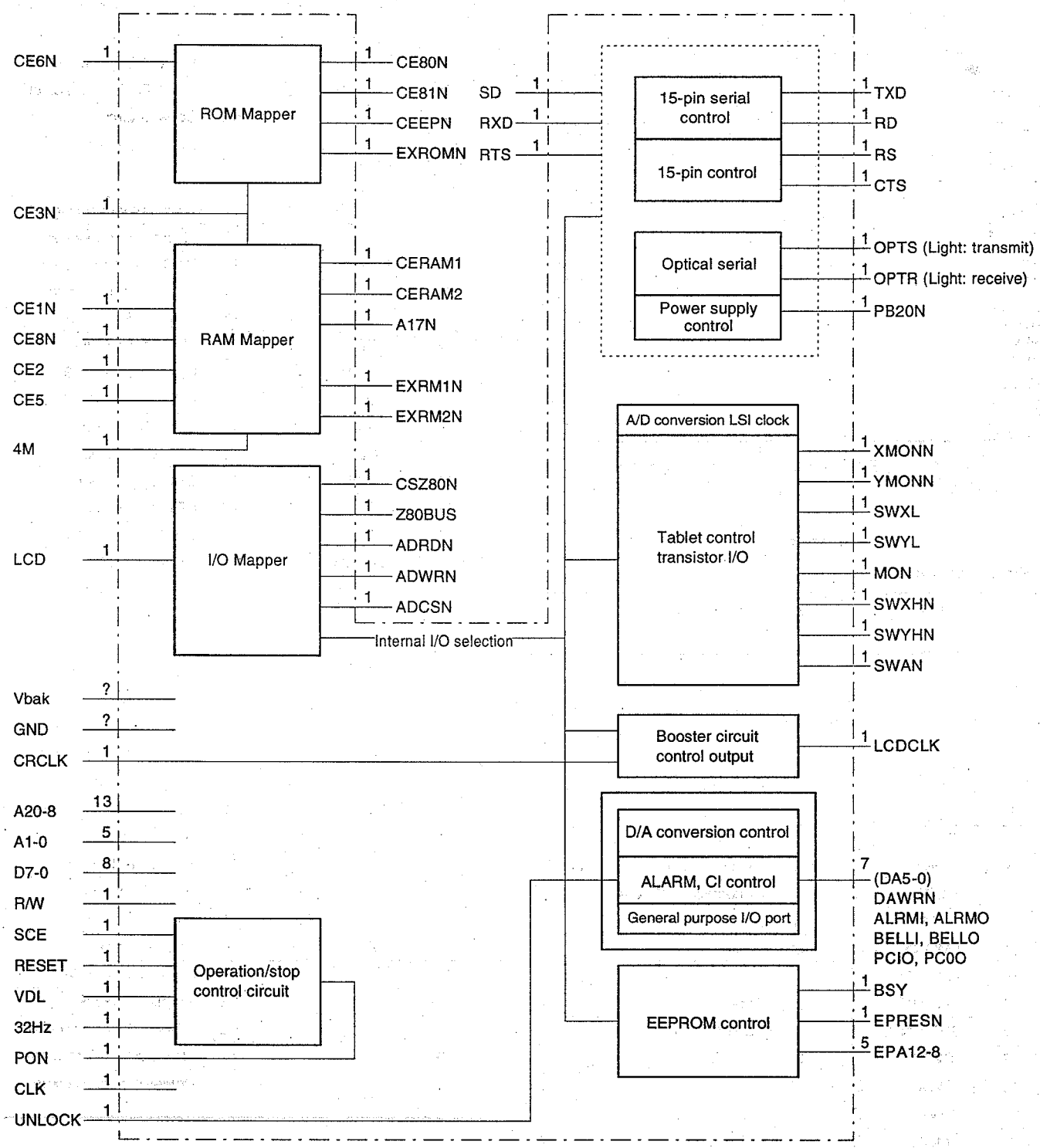


Fig.7 LZ95G33 block diagram

3) Pin description

PIN No.	Signal name	Description
1	$\overline{CS}$	[Chip Select] Chip select signal input. A low on this line accepts $\overline{WR}$ and $\overline{RD}$.
2	$\overline{RD}$	[Read] Data read signal input. A low on this line send the conversion data.
3	$\overline{WR}$	[Write] Goes into the standby mode with -CS at a low and -WR at a low.Data write signal input that the data is read at a low to high transition and starts the conversion.
4	CKI	[Clock Onput] Standard clock input for conversion.
5	$\overline{INTR}$	[Interrupt](Not used) Conversion termination signal. Goes into a low state after completion of conversion, and returns to a high state with a first -RD signal and a high state of -WD signal.
6	VIN1	[Analog Input] Analog input line. Input range is GND~VREF. ON channel / CHS: VIND "L"; VIN1 "H"
7	VIN0	
8	AGND	[Analog Ground] Reference voltage supply line that determines the zero point of VIN.
9	VREF	[Reference Voltage] Reference voltage supply line that determines the full scale point of VIN.
10	BIT1	[Data Output] Conversion data output line.
11	BIT0	
12	VSS	[Digital Ground] System ground line, normally at 0.0V.
13	BIT9	[Data Output/Input] Write mode ($\overline{WR}$="L"): 10~2 turn into the input mode according to the mode, and the channel select (CHS) and output control data (BUSC, OUTC) are written. Remote mode ($\overline{RD}$="L"): Conversion data are sent from bits 0~9 according to the output control signals (BUSC, OUTC). BIT0:LSB BIT9:MSB
14	BIT8	
15	BIT7	
16	BIT6	
17	BIT5	
18	BIT4/12	
19	BIT3/11	
20	BIT2/10	
21	MODE	[Mode] Used to assign the data write mode (10~2).Mode="L": 10 input mode, mode="H": 10~2 input mode.
22	(NC)	[No Connection]
23	CKO	[Clock Output] Reference clock voltage output line for conversion.
24	VDD	[Power Supply] Power supply line: 5.0V10%.

2-7. EEPROM (μPD28C64GX)

1) Functional description

The μPD28C64GX has the following two functions.

- Data poll function — The end of the data cycle can be exactly known from the external source, and it may also shorten the write time.
- Write error prevent function — It has three modes to kill noise, to detect the Vcc power supply level, and the write prohibit logic.

① Data poll function

With the data poll function, the exact end point of the write cycle can be confirmed software-wise. Using this function, the control can move to a next write cycle immediately after the present write cycle has ended.

The maximum value of the μPD28C64GX write cycle time is set to 12ms, while the standard value at the end of the write cycle is 7ms. So, the write time can be reduced if this data poll function is utilized.

Do the following procedure to poll data.

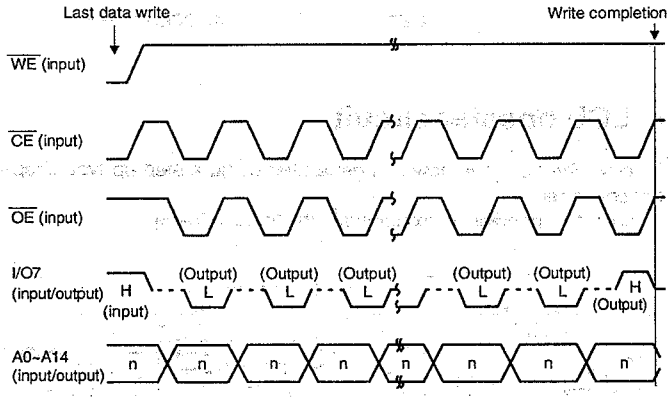
(a) After writing the data in the μPD28C64GX with the $\overline{WE}$ control write signal, the signal $\overline{WE}$ is retained high level and the data in the written address (in the page write mode, the last written address) is read (refer to the read mode timing).

(b) The output data is compared with the written data.

(c) If I/O7 of the output data is verified successfully with the written data, the write operation is finished. Now, you can proceed to a next write cycle. If the write was not completed, the inversion of the write data are sent and "0" is sent to all bits through I/O0~I/O6.

NOTE: Refer to the 2-operation mode for the $\overline{WE}$ control write mode and the page write mode.

Example) If the write data was "10101010," the output data will be "10101010" when the write has been completed. If not completed, the output data will be "00000000".



NOTE: The broken line represents an high impedance state. "n" represents an address-n.

② Write error prevention function

The μPD28C64GX has the following three modes to prevent data write error.

(a) Noise prevention
Write is prohibited if the $\overline{WE}$ pulse is under 15ns.

(b) Supply voltage Vcc level detect function
Write is prohibited if the power supply voltage is under 2.5V.

(c) Write prohibit logic
Write is prohibited if $\overline{OE}$="VIL" or $\overline{WE}$="VIH", or $\overline{CE}$="VIH", when the supply voltage is on or off.

2) Block diagram

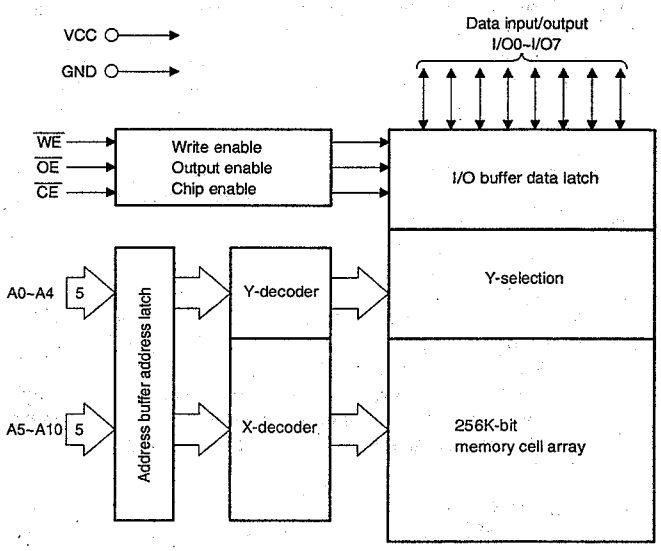


Fig.11 μPD28C64GX block diagram

3) Pin layout

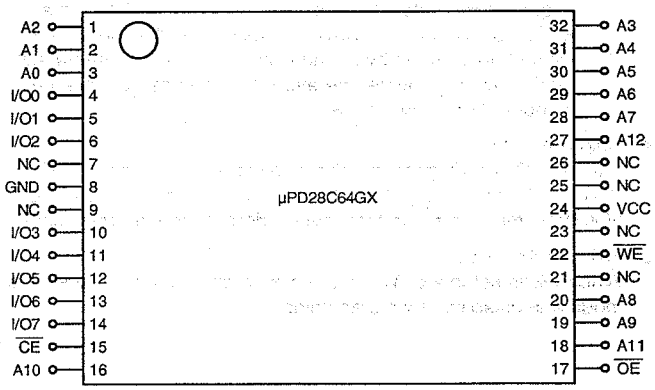


Fig.12 μPD28C64GX pin layout

4) Pin description

A0~A12	Address input
I/O0~I/O7	Data input/output
$\overline{CE}$	Chip enable input
$\overline{OE}$	Output enable input
$\overline{WE}$	Write enable input
Vcc	Power supply
GND	Ground
NC	Not connected

5) Operation mode

The PD28C64GX has five operation modes. For all modes, set -CE, -OE-, and -WE to the voltage level shown in Table 2-1. The μPD28C64GX, however, leaves the factory with all bits "1" canceled.

Mode / Pin name	$\overline{CE}$	$\overline{OE}$	$\overline{WE}$	I/O0~I/O7
Read	VIL	VIL	VIH	Data output
Standby	VIH	X	X	High impedance
Write	VIL	VIH	VIL	Data input
Chip erase	VIL	VIHH	VIL	Data input (DIH=VIH)
Write inhibit	X	VIL	X	–
	X	X	VIH	

NOTE: VIL: low level input voltage VIH: High level input voltage
X: VIL or VIH VIHH: +15V0.5V

Table 2-1. Operation modes

① Read mode
When $\overline{CE}$ and $\overline{OE}$ are low, it goes into the read mode. The output data will be sent onto the data bus through the data i/o lines (I/O0~I/O7) with an address data output delay time (tACC) after the address has been set, or with an data output delay time (tOE) from a high to low transition of $\overline{OE}$.

② Standby mode
When $\overline{CE}$ is set to a high state, it goes into the standby mode. In this mode, I/O0~I/O7 turn high impedance regardless of what state $\overline{OE}$ is.

③ Write mode

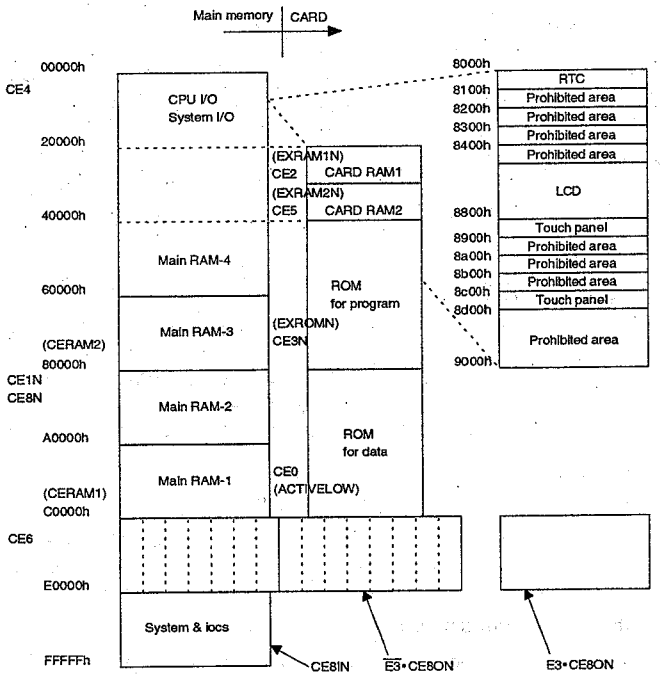
(a) Byte write mode
When $\overline{CE}$ and $\overline{WE}$ are set low and $\overline{OE}$ high, it goes into the write mode. It is possible for the µPD28C64GX to control $\overline{CE}$ and $\overline{WE}$. Address is latched at a high to low transition of $\overline{CE}$ or $\overline{WE}$ whichever appeared later. The data is latched a a high to low transition appeared earlier. The automatic erasure/write completes within 12ms of the write cycle time (tWC).

(b) Page write mode
The µPD28C64GX allows page write up to 32 bytes per page. Utilizing this feature, all bytes will be completed to write within 3 seconds. The µPD28C64GX comprises 246 pages x 32 bytes. To use the page write function, the page is assigned through the address A5~A12, then the data are sequentially written through the address A0~A4 or may be written at random. However, unless a next address is sent within 100µs of the byte load cycle, it starts the internal automatic erasure or write operation. No page can be changed in a course of the write cycle.

④ Chip erase mode
The µPD28C64GX goes into the chip erase mode when $\overline{OE}$=VIHH (15V0.5V0 and $\overline{CE}$=$\overline{WE}$="L". In this occasion, data inputs I/O0~I/O7 must be set to high level. Address input is "don't care".

⑤ Write inhibit mode
When $\overline{OE}$ is set low or $\overline{WE}$ is set high, it goes into the write inhibit mode and disables to write anything.

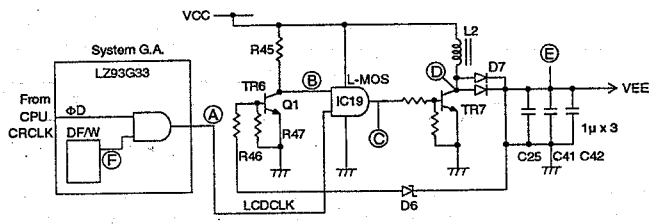
3. Memory mapping



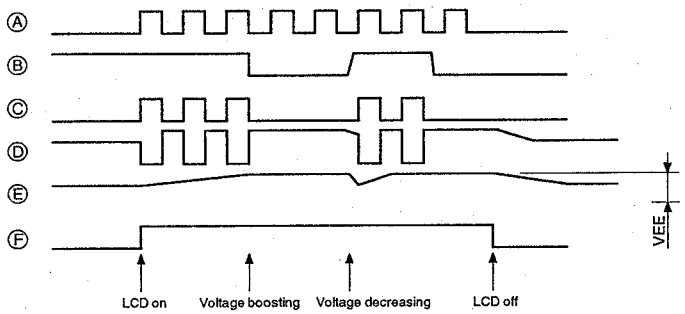
	MEIN	GARD	ACTIVE
CE0		8OOOO~BFFFF	L
CE1	8OOOO~BFFFF		L
CE2		2OOOO~3FFFF	H
CE3	NC		–
CE4	8000~8FFF		H
CE5			H
CE6	COOOO~FFFFF		L
CE7		4OOOO~7FFFF	L

4. LCD booster circuit

To drive the LCD, the power is generated using a step-up type chopper converter.
Its operating principle is explained in the lines to follow.



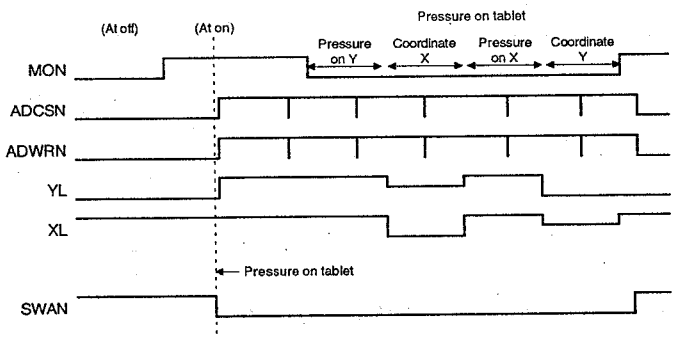
The clock of approximately 30KHz is supplied from the CPU through ϕD that can be controlled to supply and discontinue to the converter by means of DF/F output of the gate array. Ⓕ is set high in a course of starting up the unit to supply the clock to the converter. Ⓕ is set low in a course of quitting, and the point Ⓐ is fixed low.
As the operational theory, when the clock is supplied to Ⓐ with the point Ⓑ at a high, the Q2 is set on/off by the IC1 output. Energy is stored in the coil L during the Q2 on period, and the energy is released during the Q2 off period. The output voltage is controlled by the zener diode AD. When the zener voltage goes above VBE of +Q1, the transistor Q1 is turned active with the point B set low. Until the output voltage drops, the point Ⓒ is kept low and the converter discontinues to operate.
The figure on the next page shows the waveforms. (In terms of operation, it is a negative feedback that VEE becomes stable.)

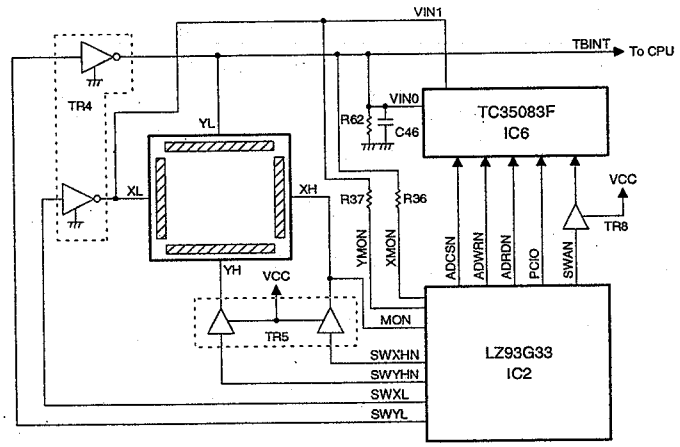


* Although the voltage VCC-VF is added to VEE while the unit is off, no voltage is added to the LCD driver since it is turned off within LVC (transistor switched).

5. Operation of the transparent tablet (A/D converter)

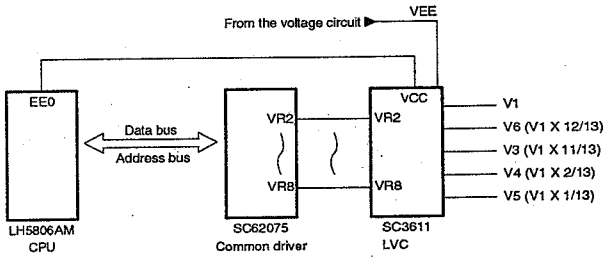
To locate the point on the transparent tablet, it uses a tablet control transistor, an A/D converter, and a gate array.
In the A/D converter, the coordinates X and Y of the tablet is converted from the analog voltage to a 10-bit data. (Conversion is done after checking the pressure level is above a fixed level.) The tablet is multiplexed via the control transistor, and voltage is added towards X and Y axis. A voltage proportionate to the pressed point is sent to YL for the X-axis and XL for the Y-axis. The gate array controls the A/D converter (read/write) and output of the transistor.
To save power consumption, the A/D converter is kept in the standby mode (CS and WR forcing low) and the reference voltage for the A/D converter is supplied only when required (SWAN signal).





6. LCD contrast adjustment

Contrast adjustment using electronic potentiometer is controlled in the following manner.
CPU data are latched in the common driver (8-bit contrast adjust parameter) and sent out. These outputs are sent to LVC (SC3611) where the LCD voltages appropriate to the data are sent through V1V6.

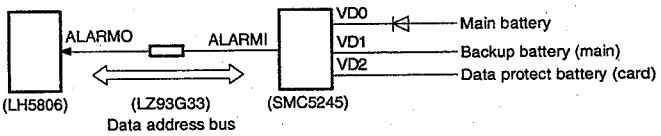


VR2VR8 are issued as a 7-bit data of LSB through MSB. When the data are at the highest value, the output voltage is the largest.
Source voltage for V1V6 is from VEE that supplied from the booster circuit.
Meanwhile, ON and OFF of V1V6 outputs are controlled by the EE0 line of the CPU.
When EE0 is at a high, the output voltage is active. When EE0 is at a low, the output voltage is not active.

7. Low battery detection

The main battery level is monitored in two stages. When a low battery is sensed first, the BATT. indicator is turned on (caution level). If a further drop is found, it turns off (fatal level).
It also monitors the backup battery and the RAM card data protection battery voltage.

● Operating theory

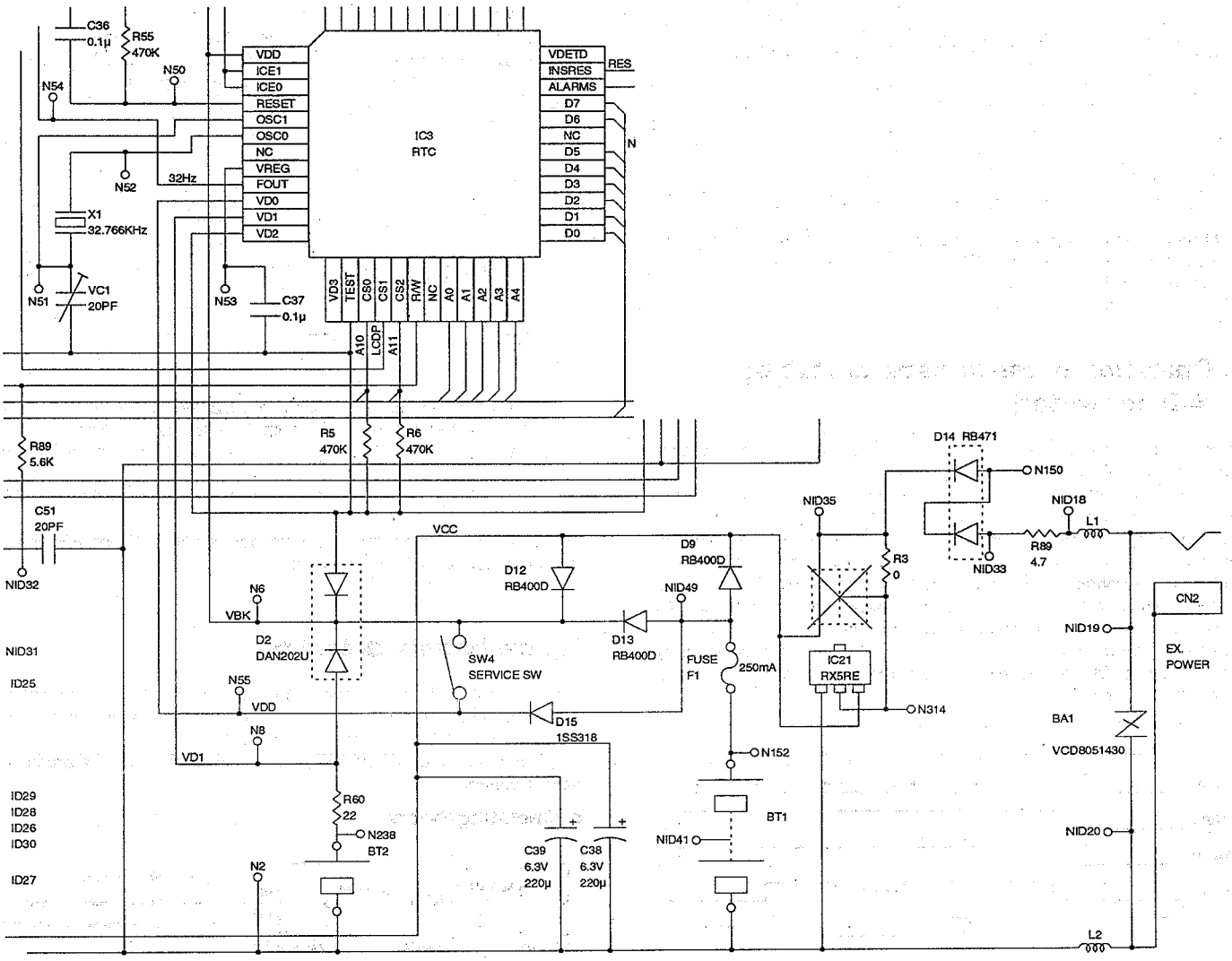


The low battery function is incorporated in RTC (SMC5245), the detection level and the detection line are switched by software. When a low battery is found by RTC, a high state of signal is issued onto the ALARMS line to inform the occurrence to the CPU.

① Main battery detection
Software switch is done using the V0 line of RTC to select a two-stage detect level. The input is at 1.5~2.5M when the caution level is discovered.

② Backup battery detection
The internal switch is selected on VD1 and VD2 lines of RTC, and a single internal detector is used to detect.

8. Servicing circuit



- When VCC voltage is restured from the fatal level by connecting the adaptor, the detector (RTC) keeps detecting LOW output of the operation battery. ON/OFF reset key input is inhibited by the (RTC) memory protection circuit, and the system is kept at OFF state.
- The combination of the

  [ON] + [S] + [SW4] (SERVICE SW)+RESET
  ↓ Next
  [ON] + [S] + [SW4] (SERVICE SW) [RESET SW]
  Keep
- The CPW jndge the combination of key ([ON] + [S]) and rising is performed without batter voltage detection.
- This allows a serviceman to perform special rising of the set whose operation voltage is below the fatal level by inserting a AC adaptor power to confirm the memory display and then replace the battery (Secret function)

9. Current consumption check

① OFF current measurement (main body)
Current consumption under OFF state must be max. 16µA

② Current measurement during display (main body)
The current consumption during display must be max. 9mA.

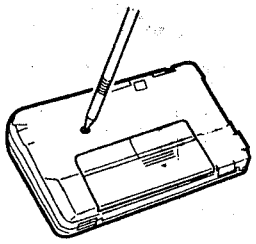
③ Backup current measurement
The backup current consumption must be max. 4.2µA

Note: External power supply

3. NOTE FOR SERVICING

1. Resetting the Organizer

A strong impact, exposure to an electrical field, or other unusual conditions may render the Organizer inoperative, and pressing the keys or touch buttons will have no effect. If this occurs, you will have to press the RESET switch on the back of the Organizer using the touch pen or similar object to be able to continue to use the unit.

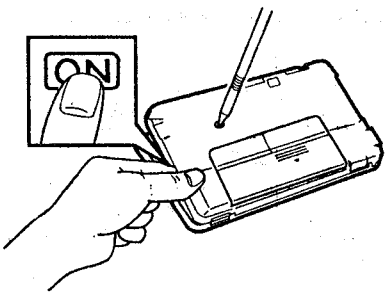


- A condition that makes the Organizer inoperative may erase some or all of the data stored in memory.
- Do not use anything breakable, anything with a sharp tip or anything that might break to press the RESET switch.

All reset operation

If the Organizer still fails to function after it has been reset using the procedure above, or you have forgotten the password to be entered in the start-up display, you will have to reset it using a sightly more complicated procedure:

1. While pressing and holding [ON] , press and release the RESET switch.



   A message appears.
2. Release [ON] .
3. Touch [N] .
   The built-in clock is reset.
   - Do not touch [Y] in step 3. Doing so will delete all data in the Organizer.
   - However, if you have forgotten the password to be entered in the start-up display, you have no choice but to touch [Y] , losing all your data, to be able to use the Organizer.

2. Battery Replacement

General guidelines

The Organizer uses the following types of batteries:

Use	Type	Size/Model	Qty.
General operation	Alkaline or manganese batteries	LR03 (L30) or R03 (AAA)	4
Memory backup	Lithium battery	CR2032	1

There are some extremely important points to remember when installing new batteries:

- Do not remove the operating and backup batteries at the same time. Doing so will result in the loss of all data stored in the Organizer's memory.
- Backup all important data before replacing the batteries.
- Remove any installed IC card before replacing the batteries. If an IC card contains its own batteries, confirm that those batteries are not depleted before removing the card from the Organizer.
- Replace all four operating batteries at the same time with new batteries of the same type.
- The memory backup battery installed at the factory at the time of manufacture may have become depleted during shipment and may not have the full battery life indicated in the specifications.

Caution:

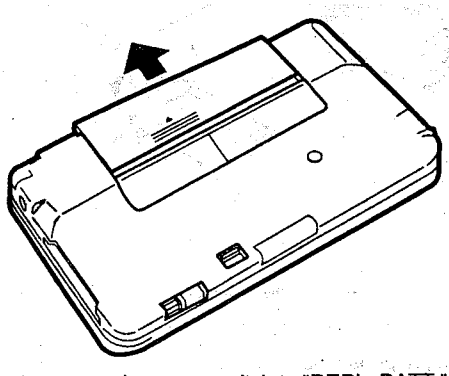
- Keep batteries out of the reach of children.
- Remove batteries from the Organizer when they become weak or when the Organizer is not to be used for a long period of time. Leaving weak batteries in the Organizer may cause battery leakage and damage from corrosion.
- Do not dispose of batteries by fire as they may explode.

Replacing the operating batteries

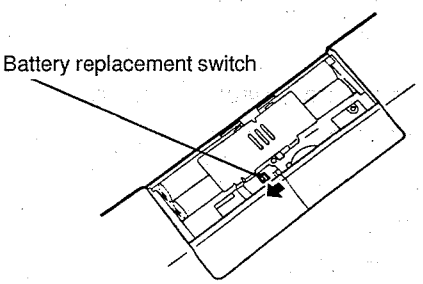
When using the Organizer, if the display becomes too dim to read even after the LCD contrast is adjusted, or the ▶ indicator comes on next to **BATT** , the operating batteries may need to be replaced. To confirm this, turn the Organizer off and then on again. If the display shown below appears, replace all four of the operating batteries immediately.

```
Replace the 4 main operating batteries.
```

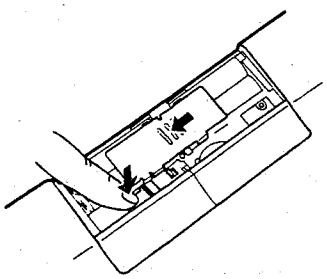
1. Turn off the Organizer.
2. Slide off the battery compartment cover on the back of the unit.



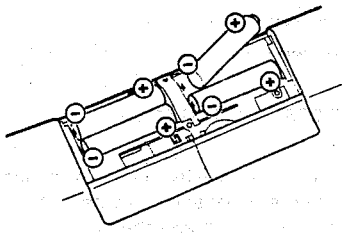
3. Slide the battery replacement switch to "REPL. BATT."



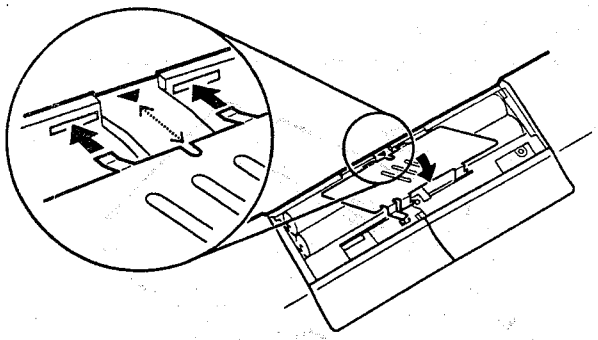
4. Pushing down the lock tab, slide off the silver battery holder.



5. Remove the old batteries.
6. Insert the four new batteries, positioning them according to plus (+) and minus (-) polarity, as indicated.



7. Line up the tab on the battery holder and slide the holder into the unit until it clicks. Make sure that ▲ on the unit and the indentation in the battery holder line up.



8. Slide the battery replacement switch to "USE."
9. Replace the battery compartment cover.

   If nothing happens when you press [ON] :

   - Check that the battery replacement switch is set to "USE,"
   - Check that the card lock switch is set to LOCK,
   - Repeat the above battery replacement procedure step by step.

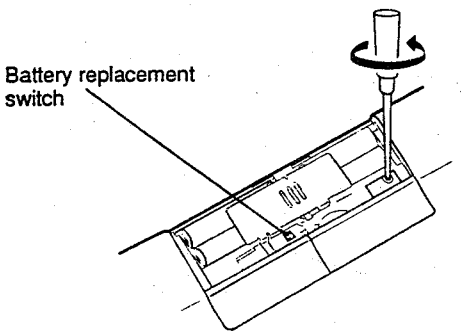
Replacing the memory backup battery

The Organizer's memory backup battery has an expected life of approximately five years under normal conditions (temperature extremes can shorten the life of the battery).
Replace the memory backup battery every five years or whenever the following display appears.

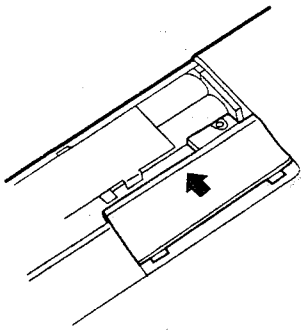
> Replace main memory back-up battery.
> Please read the operation manual for directions.
> [I SEE]

Do not try to replace the memory backup battery of the operating batteries are weak. Doing so may result in the loss of all data in the Organizer. If necessary, replace the operating batteries before replacing the memory backup battery.

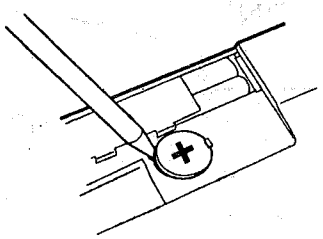
1. Turn off the Organizer.
2. Slide off the battery compartment cover on the back of the unit.
3. Slide the battery replacement switch to "REPL. BATT."
4. Remove the screw holding the battery cover in place.



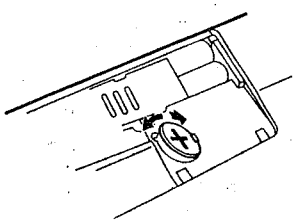
5. Slide off the battery cover.



6. Remove the old battery using the touch pen or a similar object.



7. Insert a new battery with the plus (+) side up.



8. Replace the battery cover and secure it with the screw.
9. Slide the battery replacement switch to "USE."
10. Replace the battery compartment cover.

    If nothing happens when you press [ON] :

    - Check that the battery replacement switch is set to "USE,"
    - Check that the card lock switch is set to LOCK,
    - Repeat the above battery replacement procedure step by step.

3. Transferring Data

There are several ways to transfer information, entire entries, or files between the Organizer and other information processing devices, including personal computers and other SHARP Organizers. In this way, you can backup your information to guard against losing it, or copy information so that you or someone else can work with it on another device. A summary of transfer devices, transferable data, and tasks a transfer device is most suited to is provided in the table below.

Transfer device	Transferable data and direction of transfer (→: send, ←: receive)	Peripherals required	Most suitable task
Another 9000 Series Organizer	Single entry, entire file/ applications, Filer folders ←→	None for infrared transfers; CE-315L for cable transfers	Exchanging data with other 9000 Series Organizers.
6000, 5000, 7000 and 8000 Series Organizers	Entire applications ←	CE-315L	Transferring data from other Organizer models.

Transfer between 9000 Series Organizers

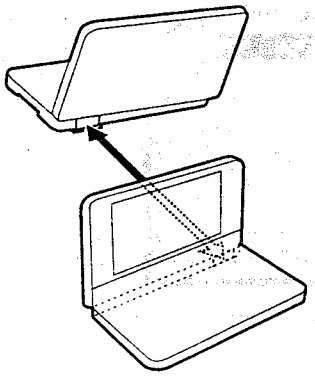
Data can transferred directly between two 9000 Series Organizers via the infrared port. Single entries or all the entries in an application can be transferred in the **Schedule, To Do, Ann, Notebook, Outline,** and Scrapbook applications; and single entries or all the entries in a file can be transferred in the **Tel** and **User File** applications. Using the Filer, a group of entries from different applications can also be transferred.
The transfer procedure differs according to whether single entries, complete files, or folders are to be transferred.

- Press [ON] at any time to cancel a transfer.
- After a transfer, the display returns to the application being used before the transfer procedure was begun.
- Received data is stored and appended to the existing data of the selected application. After a transfer with [GET] and [SEND], the data is also automatically assigned to the IN folder of the Filer application so that you can check it after transfer. If is therefore recommended that you always keep the IN folder empty.
- If a RAM card is installed, applications on it can also be selected to transfer data to or from.
- In the **Tel** or **User File** applications, the contents of fields that are not set up in the receiving file cannot be transferred. Also, if the type of a field (text or picture) is different in the two Organizers, it cannot be transferred.
- No peripheral devices are required to transfers are easily affected by ambient conditions which may interfere with this type of transfer. Connecting the two Organizers with the optional CE-315L cable will ensure a more reliable transfer.

Initial set-up

There is no special hardware set-up involved in infrared transfers. And if you only want to transfer single entries or single Filer tolders using [GET] and [SEND], there is no software set-up either: all you have to do is set up the units properly (step 4 below). For all other infrared transfers, follow the procedure below.

1. Press [2nd] [PERIPHERALS] on both units to open the **PERIPHERALS** menu.
2. Select SET UNIT TO UNIT PATH.
   A submenu opens.
3. Select VIA INFRARED PORT.
4. Place the two units so that their infrared ports are in line and within 80 cm of each other.



- When transferring entire applications or files, or entries marked as secret, both Organizers must be unlocked.
- Although infrared transfer requires no special hardware, it is easily affected by ambient conditions and other factors such as external light, undercharged batteries, large transfer distance, transfer angle, etc. As a result, while infrared transfer is in itself quite easy, there is considerable scope for errors, failure to transfer data and incomplete data transfer (missing data). It is therefore recommended that you confirm the received data after an infrared transfer.
- Avoid direct sunlight.
- Keep the infrared port clean with a soft, dry cloth. Dust on the port will make transfer difficult.

Transferring single entries

Single entries can be transferred in all applications.

1. Turn on both Organizers.
2. On the sending unit, select the entry you want to send in the index mode or display it in the View mode.
3. Press [GET] on the receiving unit.
4. Press [SEND] on the sending unit.
   The selected entry is transferred and appended to data in the appropriate application.

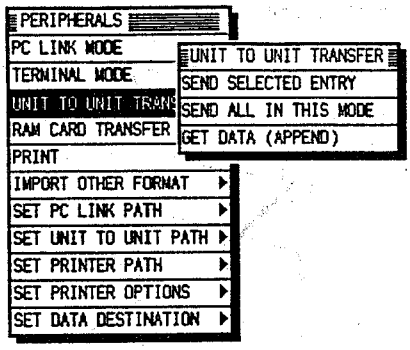
   You can also transfer single entries using UNIT TO UNIT TRANSFER in the **PERIPHERALS** menu. In step 3, after opening the same application as on the sending unit, select GET DATA (APPEND) on the receiving unit. Then, in step 4, select SEND SELECTED ENTRY on the sending unit.

Transferring all entries in an application

With the exception of the **Tel** and **User File** applications, all entries in all applications can be transferred. In the Tel and **User File,** all entries in individual files ca be transferred.

1. Turn on both Organizers.
2. Open the same application on each.
   If you are in the **Tel** or **User File** application, also select the file.
3. On the receiving unit,
   - Press [2nd] [PERIPHERALS].
   - Select UNIT TO UNIT TRANSFER.

A submenu opens.



- Select GET DATA (APPEND).

4. On the sending unit,
   - Press [2nd] [PERIPHERALS] .
   - Select UNIT TO UNIT TRANSFER.

   A submenu opens.
   - Select SEND ALL IN THIS MODE, or SEND ALL IN THIS FILE in the Tel and User File applications.

   All entries in the application or in the selected file are transferred.

   In the Schedule, Tel and User File applications, if the Filter function is turned on, only the filtered entries will be transferred.

Transferring a Filer folder

1. Turn on both Organizers.
2. On the sending unit, select the folder you want to send in the Filer Drawer.
3. Press [GET] on the receiving unit.
4. Press [SEND] on the sending unit.

   The transferred entries are stored in the appropriate applications and are also automatically assigned to the In folder on the receiving unit.
   - After completing the transfer, you should move the data from the IN folder on the receiving unit to another folder.

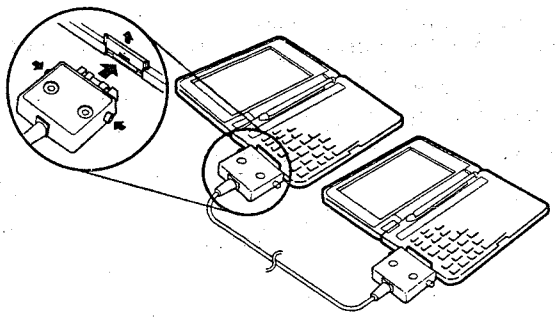
   You can also transfer folders using UNIT TO UNIT TRANSFER in the PERIPHERALS menu. In step 3, after opening the Filer application, select GET DATA (ADD TO INBOX) on the receiving unit. Then, in step 4, select SEND SELECTED FOLDER.

Cable transfer

For more reliable data transfer, you can connect two 9000 Series Organizers using the optional CE-315L cable.

To set up the Organizers with the cable,

1. Turn off both Organizers.
2. Open the cover of the 15-pin cable jack on each unit.
3. Plug one end of the cable into the cable jack on each unit.



4. Press [2nd] [PERIPHERALS] and select SET UNIT TO UNIT PATH on both units.
5. Select VIA DIRECT CABLE.
   - To conserve battery power, disconnect the cable as soon as a transfer is completed.
   - [GET] and [SEND] do not work in cable transfers. You must use the PERIPHERALS menu to transfer data by cable. Pressing these keys always initiates infrared transfer regardless of the selection for SET UNIT TO UNIT PATH or of whether the cable is connected or not.

Receiving data from Organizers other than the 9000 Series

To connect two Organizers, you need the optional CE-315L cable.

Initial set-up

1. Turn off both Organizers.
2. Open the cover of the 15-pin cable jack on each unit.
3. Plug one end of the cable into the cable jack on each unit.

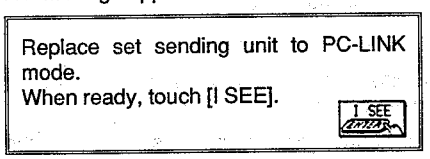
   To conserve battery power, disconnect the cable as soon as a transfer is completed.

Transferring data

1. Turn on both Organizers.
2. On the 9000 Series Organizer, open the application in which you want to receive the data.
   Only data corresponding to the application selected on the receiving unit will be transferred (regardless of the application selected on the sending unit).
   In the **Tel** and **User File** applications, select the destination file.
   To receive Business Card entries, make sure that USER FILE 1 is selected.
3. On the 9000 Series Organizer,
   - Press [2nd] [PERIPHERALS] .
   - Select IMPORT OTHER FORMAT.

A submenu opens.
- Select VIA DIRECT CABLE.

A masseage appears.



4. On the sending unit,
   - Press [2nd] (or [SHIFT] on some models) [OPTION] to open the **Option** menu.
   - Select PC LINK.
5. On the 9000 Series Organizer, touch [1 SEE] to receive all entries in the selected application on the other Organizer.

   Repeat the steps above for all applications you want to import to you Organizer.
   - Memo entries from Organizers other than the 9000 Series will be transferred to the **Notebook**, and Business Card entries will be transferred to USER FILE 1 in the **User File** application. All other matching applications will share the same name.
   - There are a few other restrictions.

   You can also transfer data from Organizers that are not 9000 Series using a RAM card or via the PC-Link mode.

Transferring data to/from a RAM card application.

To transfer data between two Organizers, you can also select an application on the RAM card to transfer data either to or from.
Simply press [CARD] to select the card memory in the application in which you want to send or receive the data, then press [GET] or [SEND] , or open the PERIPHERALS menu.
To receive single entries using [GET] or **Filer** folders in the card memory by either infrared or cable transfer, first select the card memory using SET DATA DESTINATION in the **PERIPHERALS** menu on the receiving unit.

4. Eeprom service writing/ checking procedures

The procedures are for writing software into the EEPROM in the OZ-9600II/IQ-9000/IQ-9200 or checking the content of the EEPROM in servicing.
Servicing for the OZ-9600II/IQ-9000/IQ-9200 is performed in the following cases:

(1) Writing

① When the PWB unit is replaced.

② When the mask ROM is replaced.

③ When the content of EEPROM is found not to be the latest in the servicing "(2) Checking" after repairing.

(2) Checking

④ After repairing the unit.

Operating procedures

① Make a writing card according to the EEPROM writing card making procedure (listes below).

② Write into the EEPROM according to the EEPROM writing procedure (attached).

③ Make an EEPROM software version checking card according to the EEPROM writing card making procedure.

④ Check that the EEPROM is properly written according to the EEPROM version checking procedure (attached).

⑤ After removing the checking card, all-reset the body.

Procedure

① While pressing ON key, press Reset switch.

② Press Y key.

EEPROM WRITING CARD MAKING PROCEDURE

1) Introduction

This is the procedure to make a card for writing software into the EEPROM included in the OZ-9600II/IQ-9000/IQ-9200.

2) Required units for making

① Scientific Computer Card (IQ-8B03) or Program Card BASIC (OZ/IQ-870) x 1 pc.

② RS-232C Level convertor (CE-131T) x 1 pc.

* An AC adapter (EA-11E x 1 pc.) is also required.
* A 9pin-25pin conversion connector (commercially available) is also required.

③ PC-4600 x 1 unit or an IBM compatible PC

* An AC adapter (packed together with the PC-4600) is also required.

④ The OZ-7200 or the IQ-7300M x 1 unit

⑤ PC4600 system disc for initializing x 1 pc.

⑥ A floppy disk (3.5", 2DD) for writing x 1 pc.

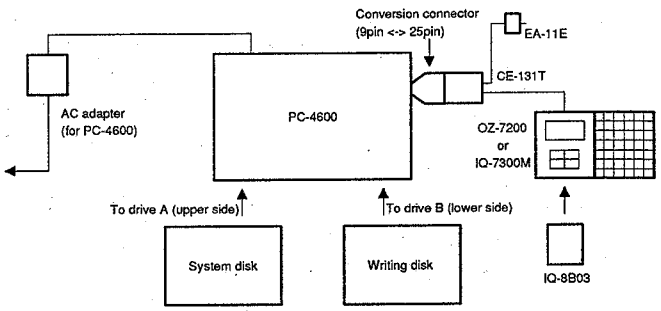
* Check that the label indicates the following and that the disk is of the latest version. (Check with the attached list for the latest version.)

OZ-9600II/IQ-9000/IQ-9200
EEPROM writing card making
Ver O. O mm/dd/yyyy

3) Card making procedure

● Procedure 1: Connection of the units

Connect all the necessary units as shown below:



● Procedure 2: Supply the power.

① Supply the power to the PC-4600.

* Check that the prompt "A" is indicated on the screen. In some cases, the computer process may stop after checking the data before indicating the prompt. In that case, press ENTER key to go on the procedure.

② Start the OZ-7200 or the IQ-7300M in the diag mode.

* To start in the diag mode, reset the unit while pressing [ON] and [9] keys.

● Procedure 3: Start the writing program in the PC-4600 side.

① Check to insure that the writing disk is in Drive B (Lower side).

② Enter "B:CARDMAKE" and press ENTER key.

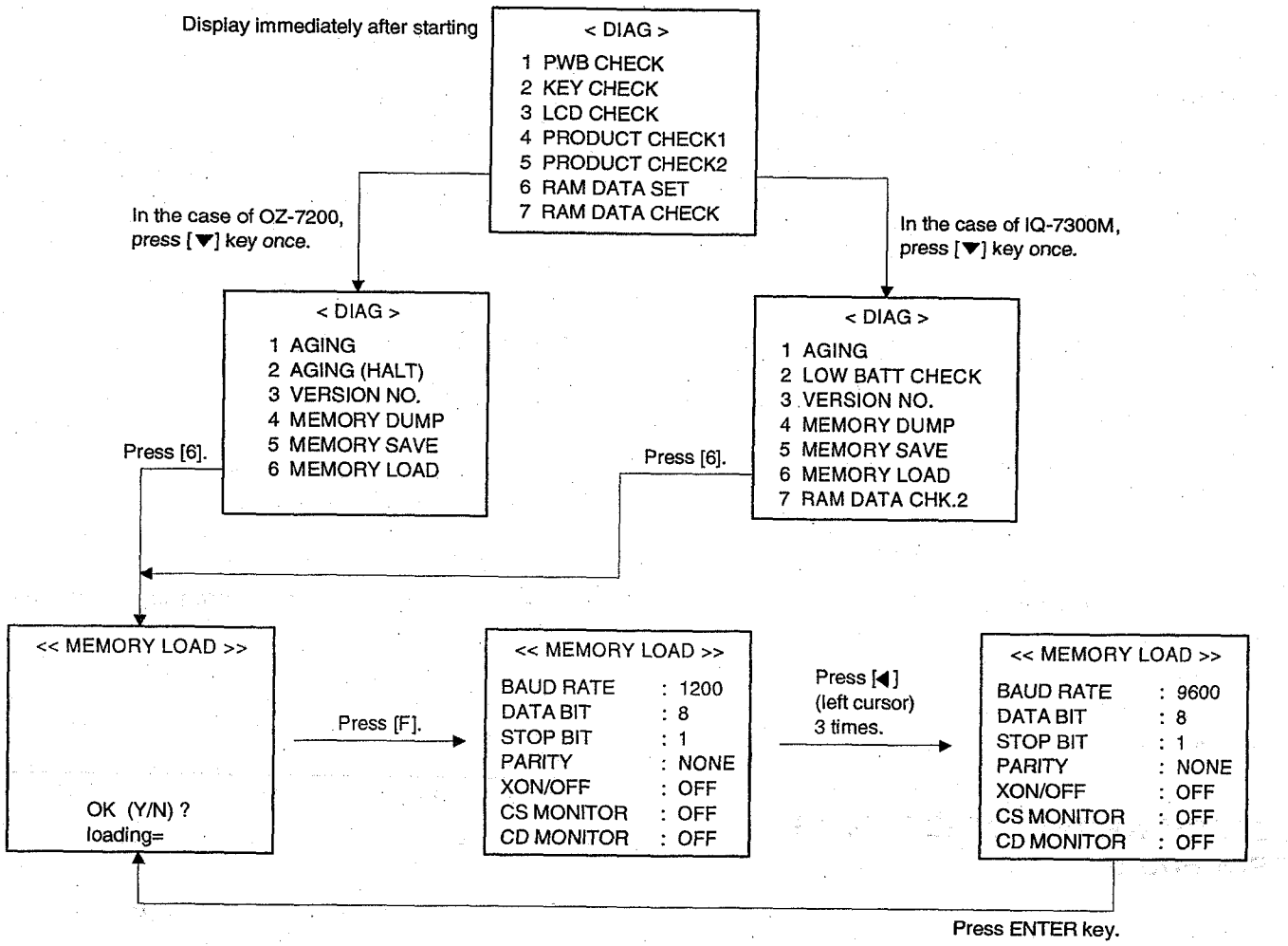
③ Check to insure that the following message will appear on the screen.

```
**********************************************
**********************************************
          OZ-9600II/IQ-9000/IQ-9200

          Make a EEPROM-CARD Program
               Mask ROM Version  ----- O. O
               EEPROM Version    ----- O. O
**********************************************
Are you ready ?
Press any key to continue . . .
```

(For O. O showing the version, refer to the attached table.)

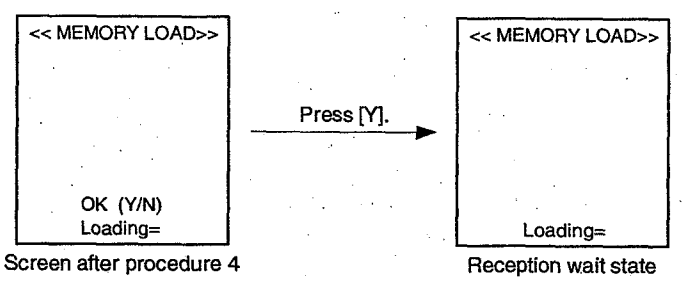
● Procedure 4: Set the OZ-7200 or the IQ-7300M.

After starting the unit in the diag mode, set according to the diagram below:



● Procedure 5: Execute writing. (Writing time is about 6 min.)

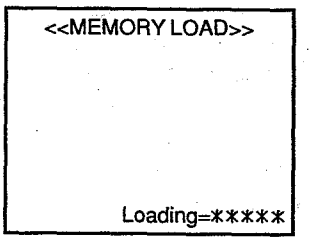
① Set the OZ-7200/IQ7300M to the reception wait state.



Screen after procedure 4 — Reception wait state

② Send data from the PC-4600.
Press any key under the screen display of procedure 3.
Please any key to continue ... (Screen display of procedure 3)
↓ Press any key.
Sending... (Screen display)

③ Check that the OZ-7200/IQ-7300M is receiving data.



When data are received and data are written, address is displayed in ***** for checking.

● Procedure 6: Check the completion of writing.

① Check that the following message and the prompt appear in the PC-4600 screen.

1 File(s) copied
Program END
A>

② Check that the following display appears in the screen of the OZ-7200/IQ-7300M.

```
<DIAG>
1 PWB CHECK
2 KEY CHECK
3 LCD CHECK
4 PRODUCT CHECK1
5 PRODUCT CHECK2
6 RAM DATA SET
7 RAM DATA CHECK
```

③ Press the reset switch of the OZ-7200/IQ-7300M to execute the card (IQ-8B03) to which data have been written. Check that the following display appears in the screen.

```
START

MODEL ERROR
```

● Procedure 7: End process

① Turn off the OZ-7200/IQ-7300M.

② Turn off the PC-4600.

③ Remove the card (IQ-8B03) from the OZ-7200/IQ-7300M.

* Perform writing into the EEPROM of the OZ-9600II/IQ-9000/ IQ-9200 with the card in order to check that writing can be performed properly.

List of the versions

Date	Flopy Disk Version	Mask ROM Version	EEPROM Version	EEPROM SUM
mm/dd/yyyy	○.○	○.○	F.○	○○○○
04/12/1993	3.5	3.0	3.5	44D4

EEPROM CHECK CARD MAKING PROCEDURE

1) Introduction

This procedure is to make a card for checking software written into the EEPROM in the OZ-9600II/IQ-9000/IQ-9200.

2) Necessary units

For ① to ⑤. the same units as required for making a card for writing into EEPROM are required.
⑥ Floppy disc (3.5". 2DD) for writing. 1 pc.

* The following label is put on the disc:

OZ-9600/IQ-9000
For making EEPROM check card
Ver O.O mm/dd/yyyy

3) Card making procedure

● Procedure 1: Connection of the units

Same as the procedure for making the EEPROM writing card.

● Procedure 2: Turn on the power.

Same as the procedure for making the EEPROM writing card.

● Procedure 3: Start the writing program in the PC-4600 side.

Same as the procedure for making the EEPROM writing card.
The screen, however, shows the following display.

```
++++++++++++++++++++++++++++++++++++++++++++++++++
++++++++++++++++++++++++++++++++++++++++++++++++++
OZ-9600/IQ-9000

Make a CHECK-CARD Program

Version 0.0
++++++++++++++++++++++++++++++++++++++++++++++++++
Are you ready ?
Press any key to continue . . .
```

● Procedure 4: Set the OZ-7200/IQ7300M.

Same as the procedure for making the EEPROM writing card.

● Procedure 5: Execute writing. (For about 6 min)

Same as the procedure for making the EEPROM writing card.

● Procedure 6: Confirm the completion of writing.

Same as the procedure for making the EEPROM writing card.
When, however, the reset switch is pressed and the card (IQ-8B03) to which data have been written is executed, the following display is given. The value "****" differes between the OZ-9600 and the IQ-9000.

```
  16M
- EEPROM VER
- EEPROM SUM
-----  ****
```

● Procedure 7: End

① Turn off the OZ-7200/IQ7300M.
② Turn off the PC-4600.
③ Remove the card (IQ-8B03) form the OZ-7200/IQ-7300M.

* Check the written card operation by operating it with the OZ-9600/IQ-9000 whose EEPROM have been written. For the version, etc., refer to the separate table for making the EEPROM writing card.

EEPROM WRITING PROCEDURE (ON + RESET, and + Y) (NECESSARY UNIT: IQ-8B03)

① With the data stored in the Electronic Organizer, turn on the power and check that the Electronic Organizer is properly started. If not, perform the all reset.
② Install the IQ-8B03 and press ON key.
③ Push CARD key.
④ Check that the display of Fig. 2 appears after 5 sec from when the "START" is displayed.
⑤ Turn off the set and remove the IQ-8B03.

Note:

- When the card used for writing has no program in it, "RUN MODE" is displayed and no operation is performed.
- When the card used for writing had erroneous data in it, Fig. 3 instead of Fig. 2 is displayed. In this case, the erroneous data should be corrected.
- When writing is performed improperly, Fig. 4 instead of Fig.2 is displayed.
- The card's touch panel screen is displayed in the lower side of every screen display.
- CAUTION: When "EEPROM CLEAR" is selected after writing, data will be erased.

```
START
```

Fig. 1

```
EEPROM OK

16M          --- O. O

EEPROM       --- O. O
```

Fig. 2

```
START

CARD ERROR
```

Fig. 3

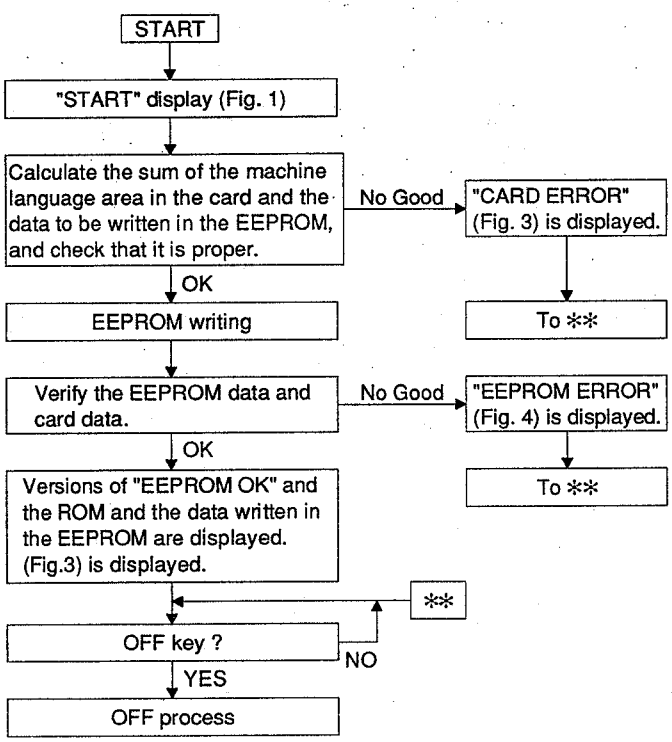
```
EEPROM ERROR

16M          --- O. O

EEPROM       --- ERROR
```

Fig. 4

(For O. O showing the version, refer to attached table in the EEPROM writing card making procedure.)

IQ-8B03 PROGRAM

Operation flowchart


START
"START" display (Fig. 1)
Calculate the sum of the machine language area in the card and the data to be written in the EEPROM, and check that it is proper.
No Good
"CARD ERROR" (Fig. 3) is displayed.
To **
OK
EEPROM writing
Verify the EEPROM data and card data.
No Good
"EEPROM ERROR" (Fig. 4) is displayed.
To **
OK
Versions of "EEPROM OK" and the ROM and the data written in the EEPROM are displayed. (Fig.3) is displayed.
**
OFF key ?
NO
YES
OFF process

DESCRIPTIONS ON ADDITIONAL SPECIFICATIONS

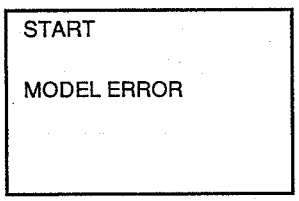


Fig. A

This is displayed when the main body is other than the OZ-9600II/IQ-9000/IQ-9200.

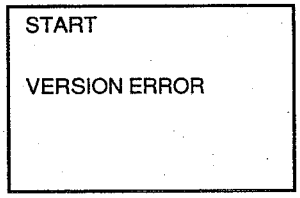


Fig. B

This is displayed when the main body mask ROM version is different from the version to which the patch is applid.

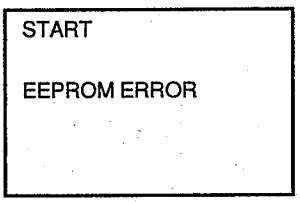


Fig. C

Some area of the EEPROM is cleared before applying the patch to the EEPROM. When an error occurs in that case, this is displayed.

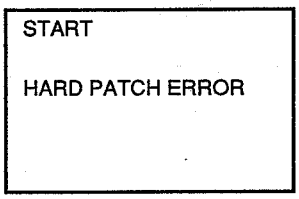
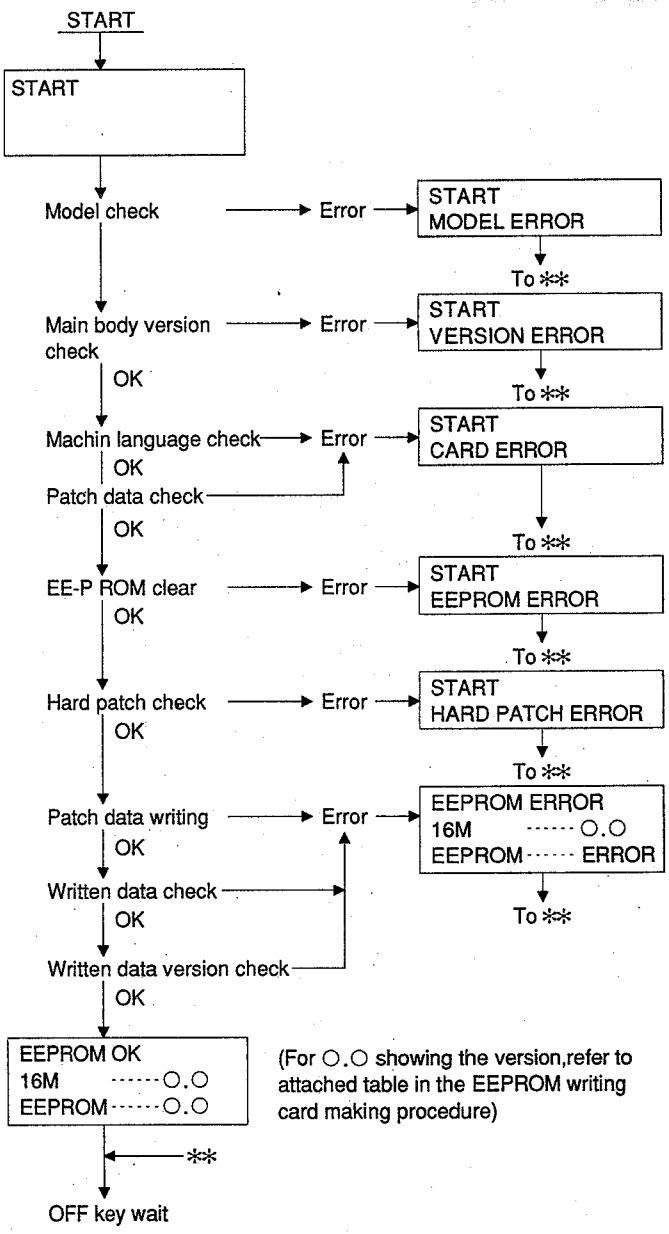


Fig. D

The hard patch check is performed before applying the patch to the EEPROM. When the hard patch does not work properly, this is displayed.



(For O.O showing the version,refer to attached table in the EEPROM writing card making procedure)

EEPROM VERSION CHECK PROCEDURE

① Install the EEPROM f=software version check card (IQ-8B03) and turn on the unit with ON key.

② Press CARD key.

③ Check that Fig. 1 is displayed.
Especially check that the EPROM version and the EEPROM check sum values are proper.

④ Turn off the set with OFF key and remove the IQ-8B03.

16M	--- O. O
EEPROM VER	--- O. O
EEPROM SUM	--- OOOO

Fig. 1

(For O. O and OOOO showing the version, refer to attached table in the EEPROM writing card making procedure)

EEPROM OPERATION CHECK PROCEDURE

① Turn on the unit with ON key.

② Press CALC touch key.

③ Press "9" key.

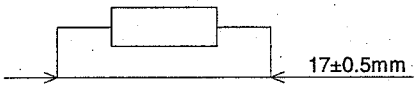
④ While pressing the uppercase key, press WORD key.

⑤ Check that the calculation result is 3.

4. DISASSEMBLY AND RE-ASSEMBLY HINTS AND TIPS

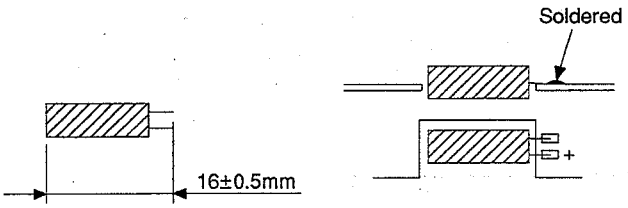
1. Sub-PWB unit

① **Coil re-trigger**



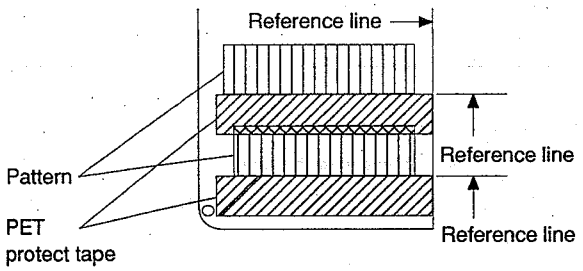
② **Cutting and soldering the electrode capacitor leads**

- Pay attention to the polarity.
- Do not allow it to override the PWB.



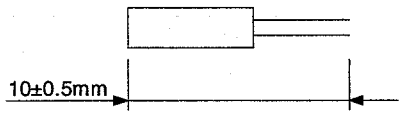
③ **Cementing the PET protect tape**

- Do not allow it to extend it out of the PWB.
- Never allow the PET to separate.



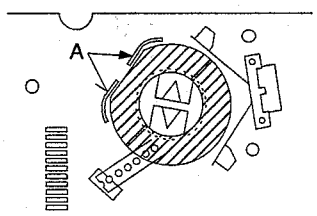
2. Main PWB unit

① **Cutting leads of crystal**



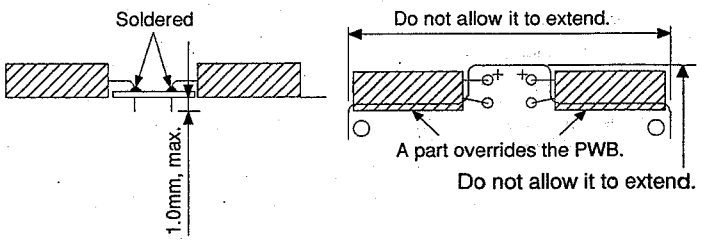
② **Cementing the B/U insulation sheet**

- Align and bond it to the resist open area (A) of the PWB shown in the figure.



③ **Bending, soldering, and cutting leads of the electrolytic capacitor C**

- Pay attention to the polarity.

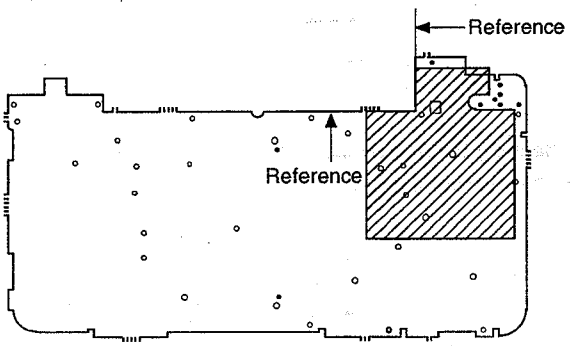


④ **Solder binding the crystal**

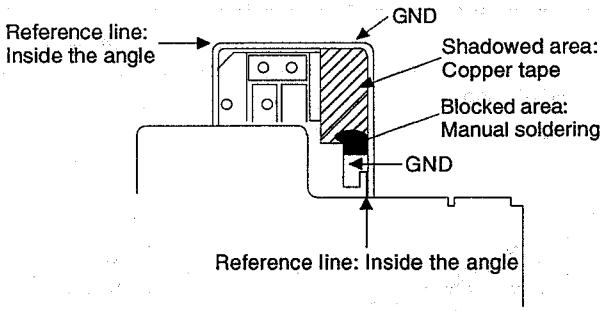
- Temperature at the tip of the soldering pencil: 280±10°C
- Heat resist time: 5 seconds

⑤ **Masking tape attachment**

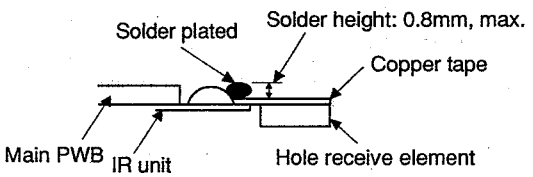
- Allowance of attachment shift is +-1mm right/left.



⑥ **Cementing the copper tape to the IR unit**

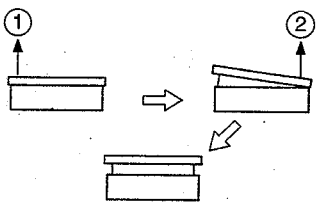


1. Cement the copper tape to the reverse side of the IR unit.
2. Bond the copper tape with solder.
   Solder height must be 0.8mm, at the most.



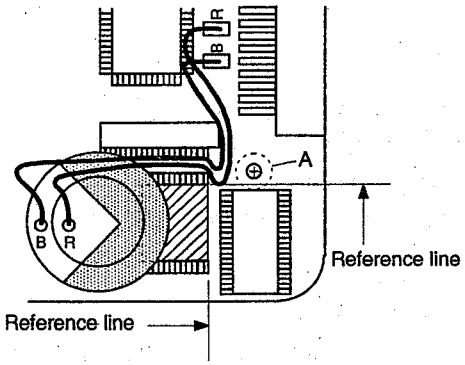
⑦ **Unlocking the connector**

- Unlock from one side at a time.
- Do not damage the slider.



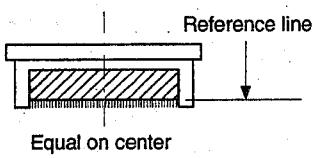
⑧ Soldering the beeper leads and routing wire

- See the figure for their locations.
- The terminals R (red) and B (black) must be bound on their given locations.
- Do not allow the leads to rest within the area A, to avoid possible seizure by the screws.
- The beeper spacer must locate at the upper right corner of a 16MB ROM chip.



⑨ Attaching the double tack tape

- Do not allow it to extend out of the connector.



⑩ Insulation sheet attachment (IQ only)

- The leads of ROM in Fig. 1 must be covered completely. Be sure to attach the insulation sheet so that it fits with the ROM shape.
- Section B in Fig. 2 must be covered completely.

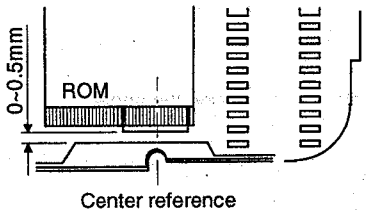


Fig. 1

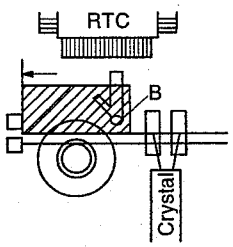
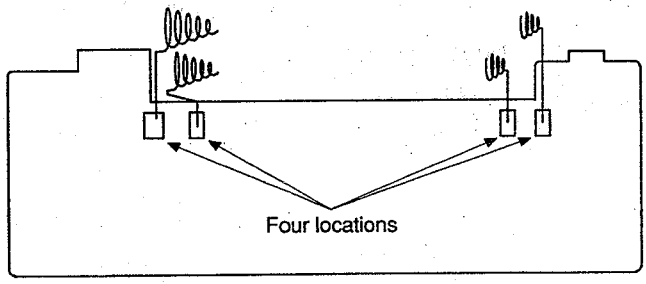


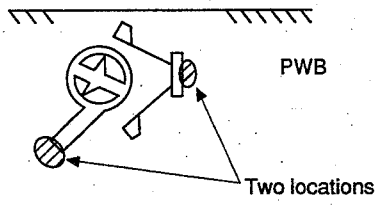
Fig. 2

⑪ Soldering the battery terminal

1. Type AAA battery terminals for the main battery at four locations, including junction.

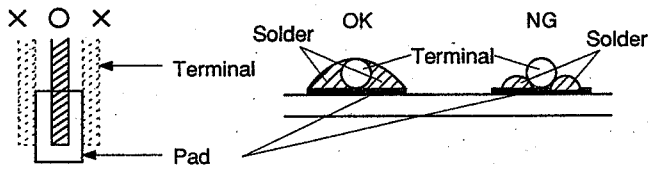


2. Backup battery terminals (two locations)

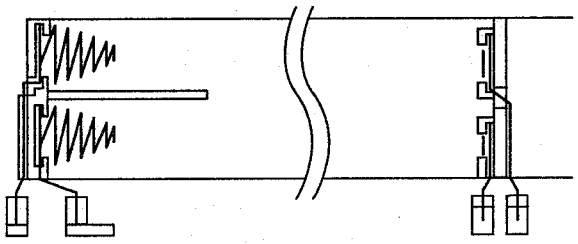


Binding the battery terminals with solder (Needs safety job)

- Apply a sufficient mount of solder and do not allow it to stray.
- The terminal must be closely attached to the PWB.
- Never cause the cabinet to melt.

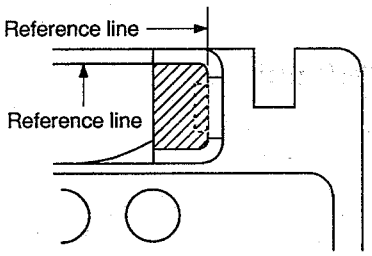


Battery terminal locations



⑫ Attaching the pen blind sheet

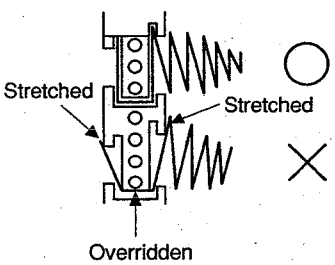
- Do not allow it to override the step.
- Do not allow to separate when attaching.
- Do not allow the blind sheet to be damaged.



⑬ Screw fastening torque

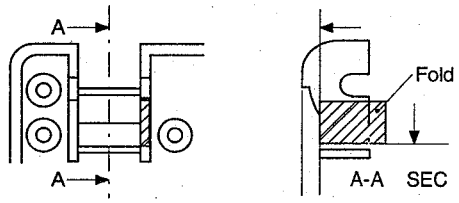
- 1.6±0.1kgf-cm

⑭ Installing the junction terminal (See the figure below.)



⑮ **Shield tape attachment (IQ only)**

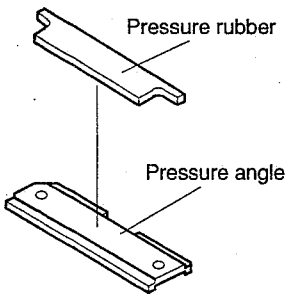
- Be sure to eliminate floating and wrinkle when attaching the shield tape.



[Pressure angle A unit]

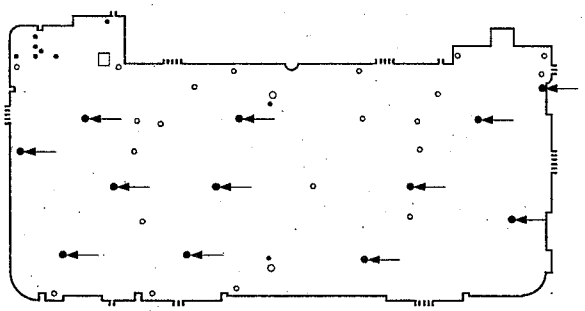
⑯ **Attaching the pressure rubber**

Not the bonding direction.

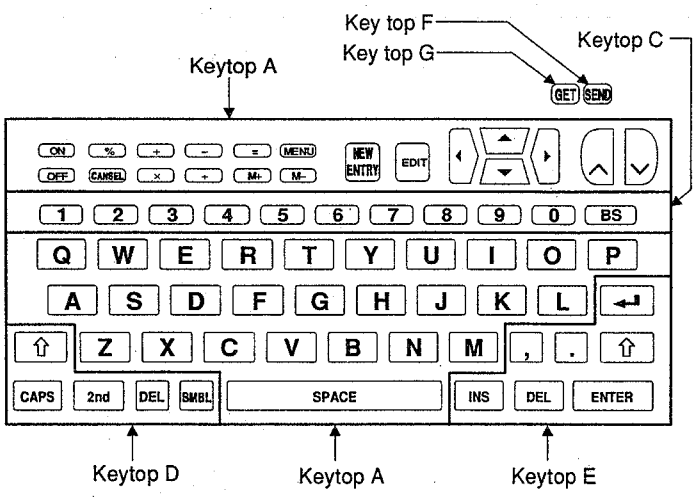


[Pressure angle A unit]

⑰ **PWB screw fastening locations**

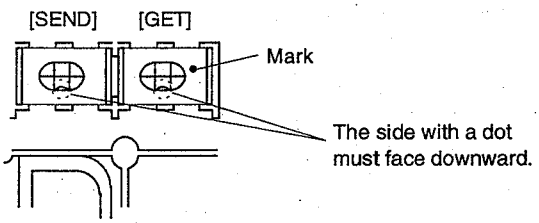


⑱ **Keytops**



⑲ **Installing the GET and SEND keys**

- Note the installing directions (GET key has a mark)

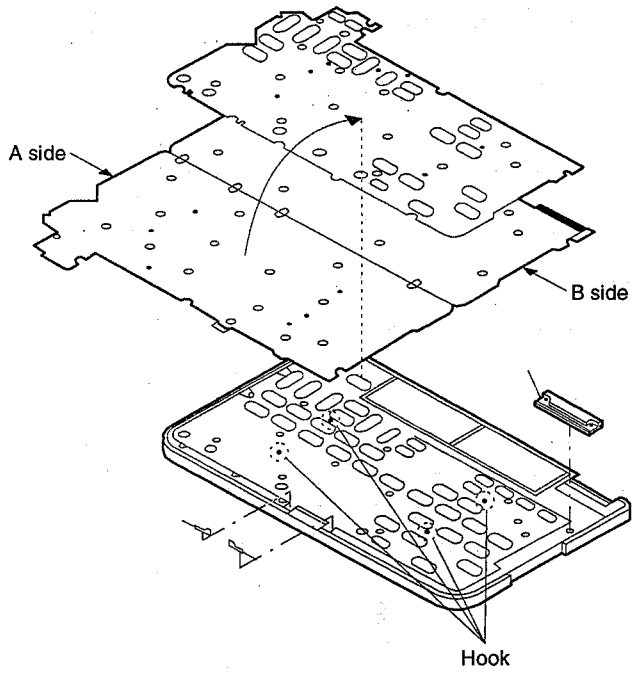


⑳ **Installing the rubber spring**

- Do not allow it to override the base.

㉑ **Installing the pressure angle A unit**

- Note the installing direction.



㉒ **Handling the keysheet**

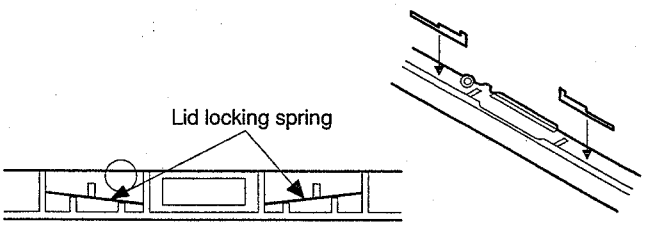
- Do not touch the carbon surface with your finger.
- Do not allow it to have crease, fold, and dust contamination.
- Wear a fingertip cover and do not directly touch with your skin.
- Clean the powder from the fingertip cover before wearing it for the first time.

㉓ **Installing keysheet and keysheet spacer**

- Note the installing directions.
- Hold them to hooks at four locations.

㉔ **Installing the lid locking screw**

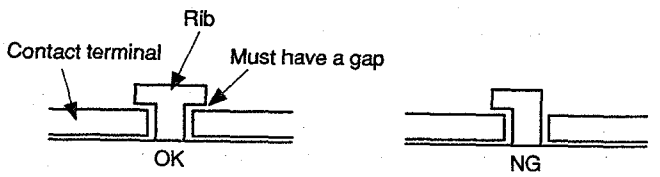
- Note the installing direction.



[Card lock switch and battery replace switch units]

㉕ **Crimping contact terminal**

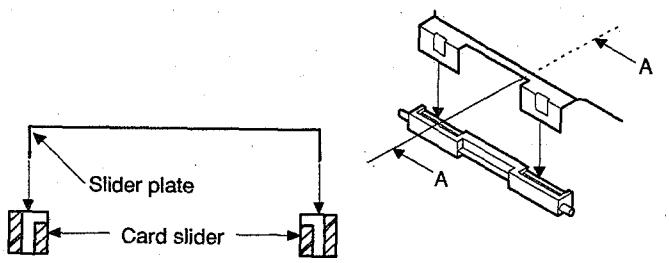
- After it has been crimped, make sure that the contact terminal can move lightly.
- Do not allow the rib to be smashed too much.
- Do not deform the contact terminal.



[Slide plate unit]

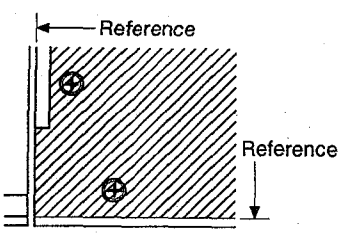
㉖ **Installing the card slider**

- Note the installing direction of the card slider when installing it.

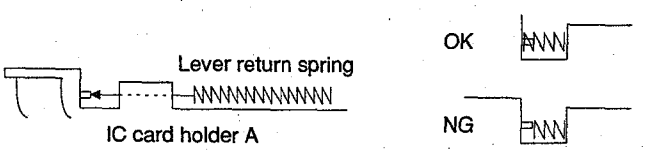


㉗ **Bonding the PWB blind plate**

- The blind sheet hole should not block the screw.
- Do not allow it to override the IC card holder.



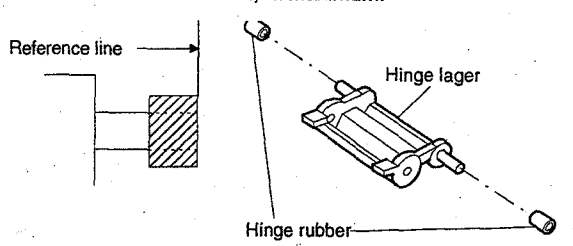
㉘ **Installing the lever return spring**



[Hinge unit, large]

㉙ **Installing the hinge rubber**

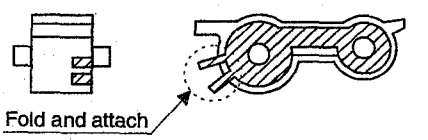
Nominal tolerance is 0.5mm, at maximum.



[Hinge unit, small] [IQ only]

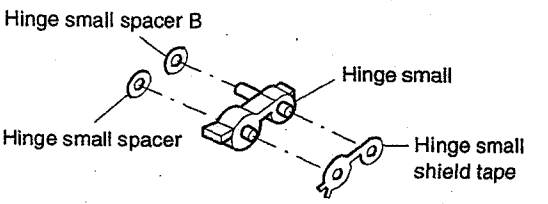
㉚ **Hinge small shield tape attachment**

- Be sure to eliminate floating and wrinkle when attaching the tape.



㉛ **Hinge small spacer and spacer B attachment**

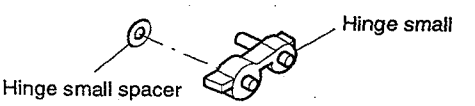
- Be sure to eliminate floating and wrinkle when attaching.



[Hinge unit, small] [IQ9600II]

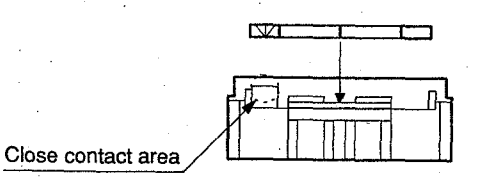
㉜ **Hinge small spacer and spacer B attachment**

- Be sure to eliminate floating and wrinkle when attaching.



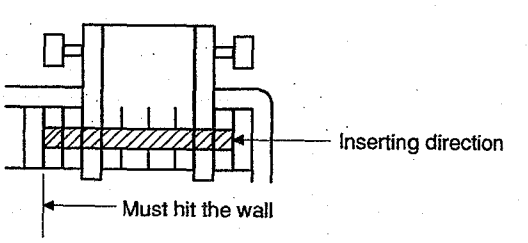
[Lid lock knob unit]

㉝ **Installing the popup spring**



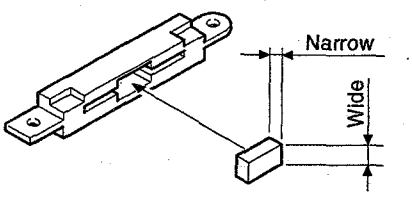
㉞ **Inserting the hinge shaft**

- Must be inserted all the way in.



㉟ **Hinge cushion insertion**

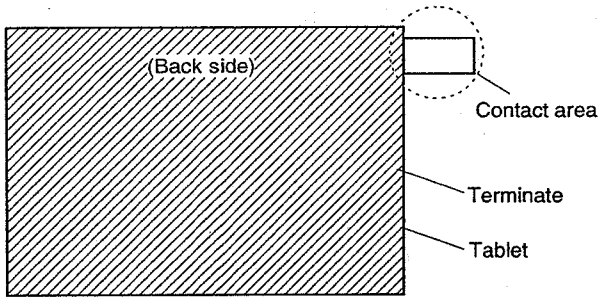
- Be careful to the inserting direction.



[Tablet mask unit]

Handling of the tablet

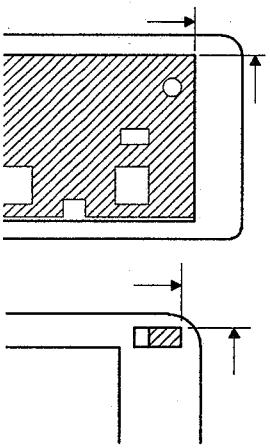
- Do not put stress on the pressure fit area when handling the tablet.
- Do not bend the pressure fit area in an acute angle.
- Do not touch the pressure fit area with your fingertip.



[Display bottom cabinet unit]

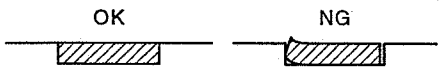
㊲ Attaching the reinforcing plate

- Note the bonding direction.
- Apply it to the stage on the right side corner when installing.



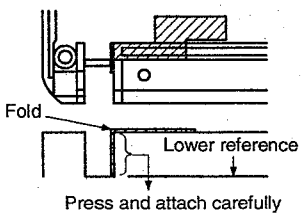
㊳ Attaching the LCD cushion

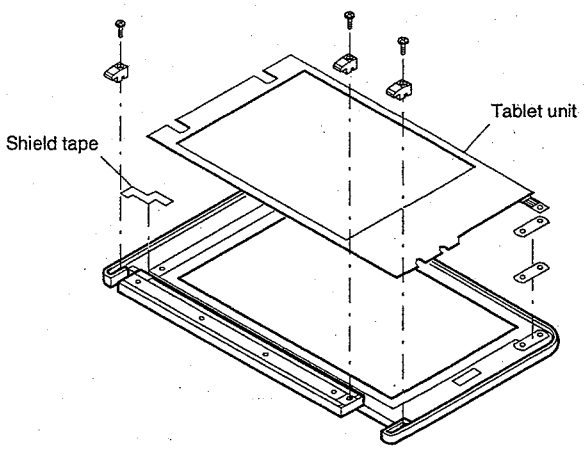
- Apply it to the stage on the right side corner when installing.
- Do not allow it to override the stage.



㊴ Shield tape attachment (IQ only)

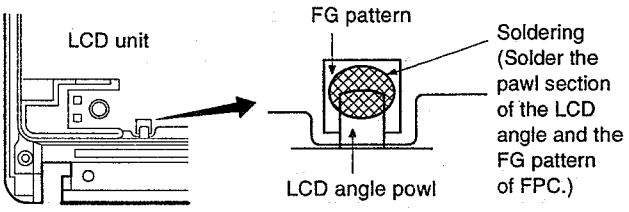
- Be sure to eliminate floating and wrinkle when attaching.



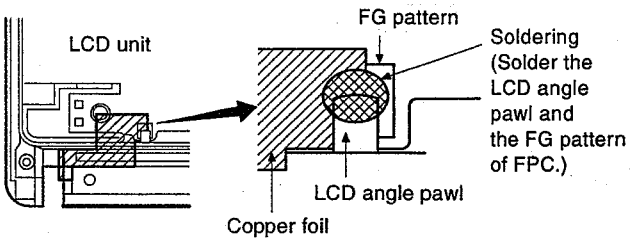


㊵ FPC (FG pattern) and LCD angle soldering

Ⓐ OZ-9600M2



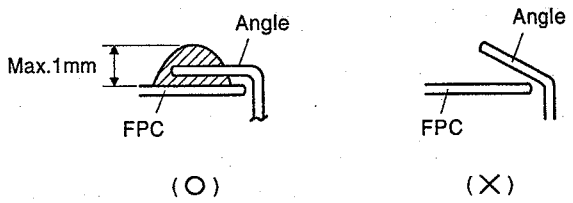
Ⓑ IQ-9000/9200 series
[For models using a new PWB: QPWBX1031PCZZ]



*Not required when an old PWB is used.

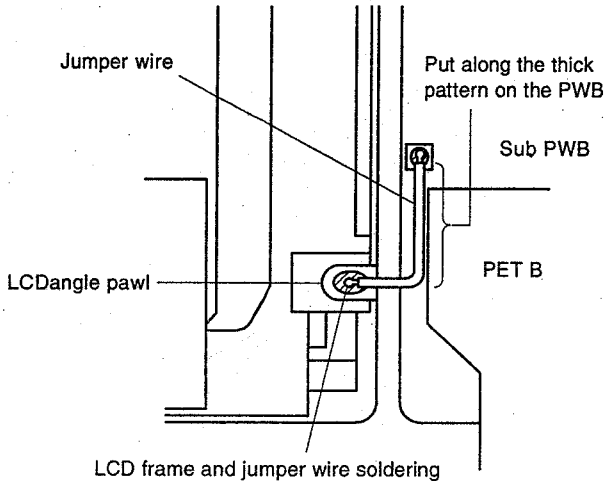
Note:

- Check that the LCD angle pawl is bent to a flat position, then solder. Adjust the quantity of solder so that its height is within 1mm.



- The max. applying time of soldering iron is 3 sec. Do not press the pawl with the soldering iron.

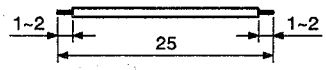
㊶ **Connect the LCd angle and the FG pattern of sub PWB with a jumper wire (For models using a new PWB: QPWBX1031PCZ2)**



*Not required when an old PWB isused.

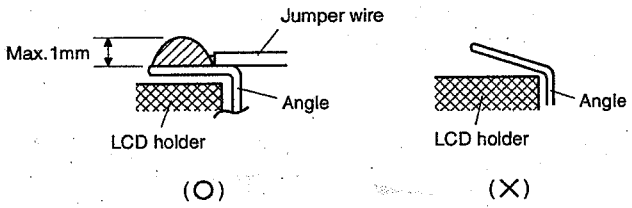
☆ Jumper wire shape

- Whole length: 25mm
- Stripped section for connection: 1~2mm each end



○ BE careful not to make contact between the soldering iron and the PET.

○ Check that the LCD angle pawl is bent to a flat position, then solder. Adjust the quantity of solder so that its height is within 1mm.



○ The max. applying time of soldering iron is 3 sec. Do not press the pawl with the soldering iron.

☆ Measure the resistance between (A) and (B) to insure that it is less than 50 Ohm.

Note 1: Measure the resistance with points (A) and (B) in Fig. 2 in the bent positions as shown in Fig. 3.

Note 2: Measure the resistance with the PET disconnected from the connector.

The purpose of this conduction test is to check that the main FG and the LCD FG are conducted in the hinge section.

Ⓐ LCD angle seen through the hole (ϕ2.5)

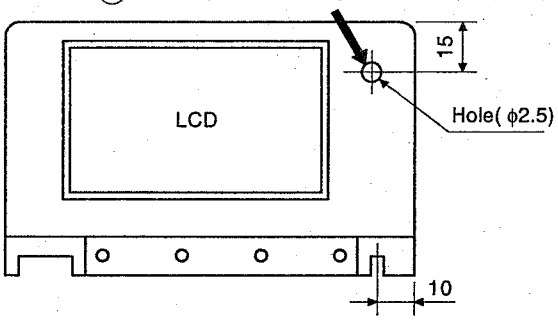


Fig. 1

Ⓑ Main PWB FG pattern

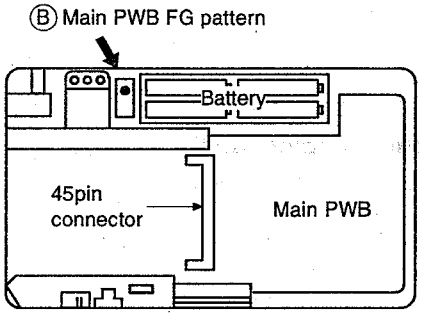


Fig.2

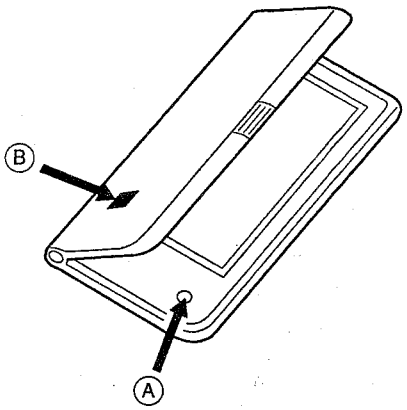
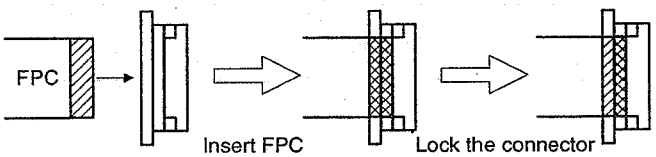


Fig. 3

㊷ **Installing the FPC to the connector**

- Insert it all the way in and lock it securely.
- Do not touch the FPC terminal.

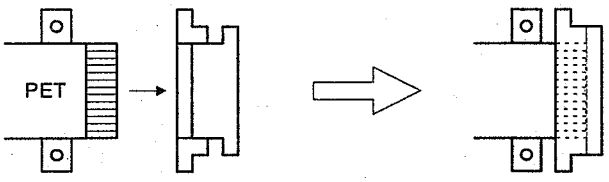


㊸ **Installing the pressure angle B**

- Note the installing direction.

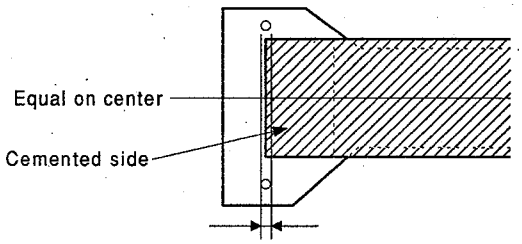
㊹ **Installing the PET to the connector**

- Insert it all the way in and lock it securely.
- Do not touch the terminal.



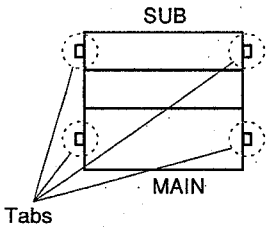
㊺ **Bonding the PET holding tape**

- Bond it straight so that the PET-B may be hidden.
- Must be bonded within the range of the PET-B hole size.



㊻ **Installing the hinge, large, B**

- Note the installing direction.
- Four tabs must be inserted firmly into the hinge, large.



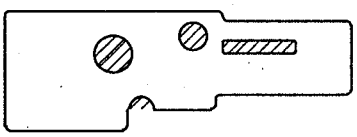
㊼ **Installing the display bottom plate to the cabinet**

- Tabs at eight locations must be firmly engaged to the cabinet.

[Key bottom cabinet unit]

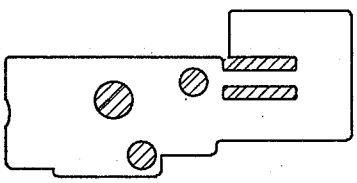
㊽ **Bonding the reinforcing angle holding tape**

- Align to the holes before bonding (rib to the shadowed area).
- Never allow it to have separation and creases.
- Do not override the rib.



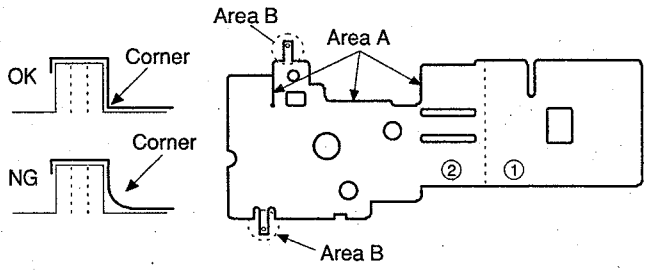
㊾ **Installing the reinforcing angle**

- Align to the holes before bonding (rib to the shadowed area).



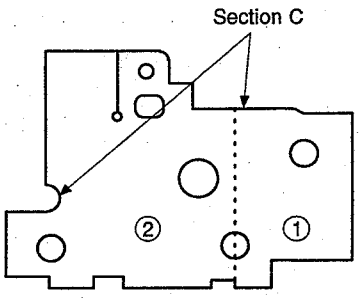
㊿ **Attaching the static sheet**

- Align the area (A) to the stage on the cabinet.
- Must be attached without separation and creases.
- Press the corner at the area (B) using a blade to firmly bond it. (Do not scratch it.)



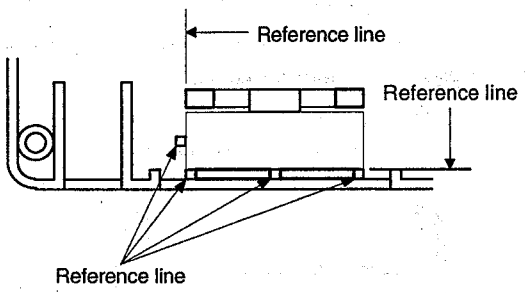
(51) **Key cabinet A insulation sheet C attachment**

- Fit sections C to dent portions of the cabinet.
- Attach securely without floating and wrinkles.



(52) **Attaching the infrared mirror holding angle**

- Do not allow it to override the rib.

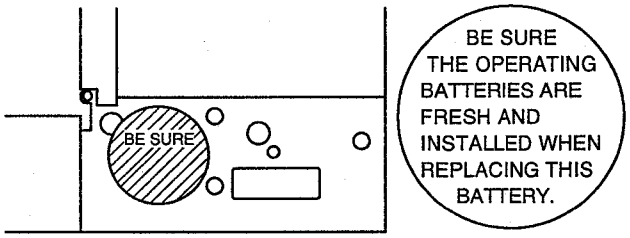


(53) **Handling the infrared filter**

- The reverse side of the infrared filter must be clean from finger print and other contamination.

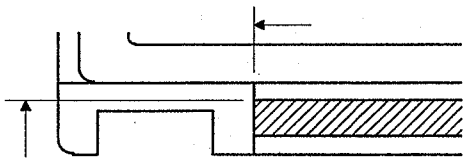
(54) **Attaching the backup battery label**

- Note the installing direction.
- Do not allow it to override the cabinet.



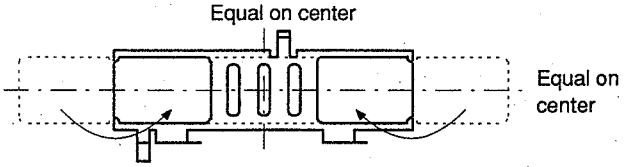
(55) **Attaching the display cabinet blind sheet**

- Do not allow it to have separation and override to the stage.



(56) **Attaching the battery holding insulation sheet**

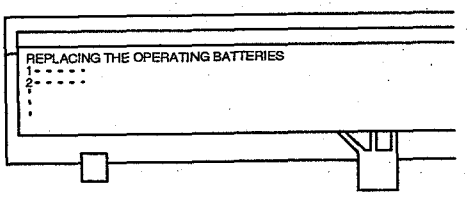
- Do not allow it to have separation and creases when attaching.
- The figure below shows the reading direction.



[Battery lid A unit]

⑰ **Attaching the battery replacement caution label**

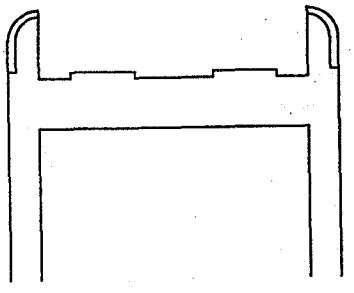
- Do not allow it to have separation and creases.
- Do not allow it to override the stage.
- The figure below shows the reading direction.



[Dummy card unit]

⑱ **Attaching the dummy card label**

- Use a soft roller and do not allow it to contain any bubble.
- Do not allow it to override the stage.
- Note the installing direction.
- See the figure for the reading direction.



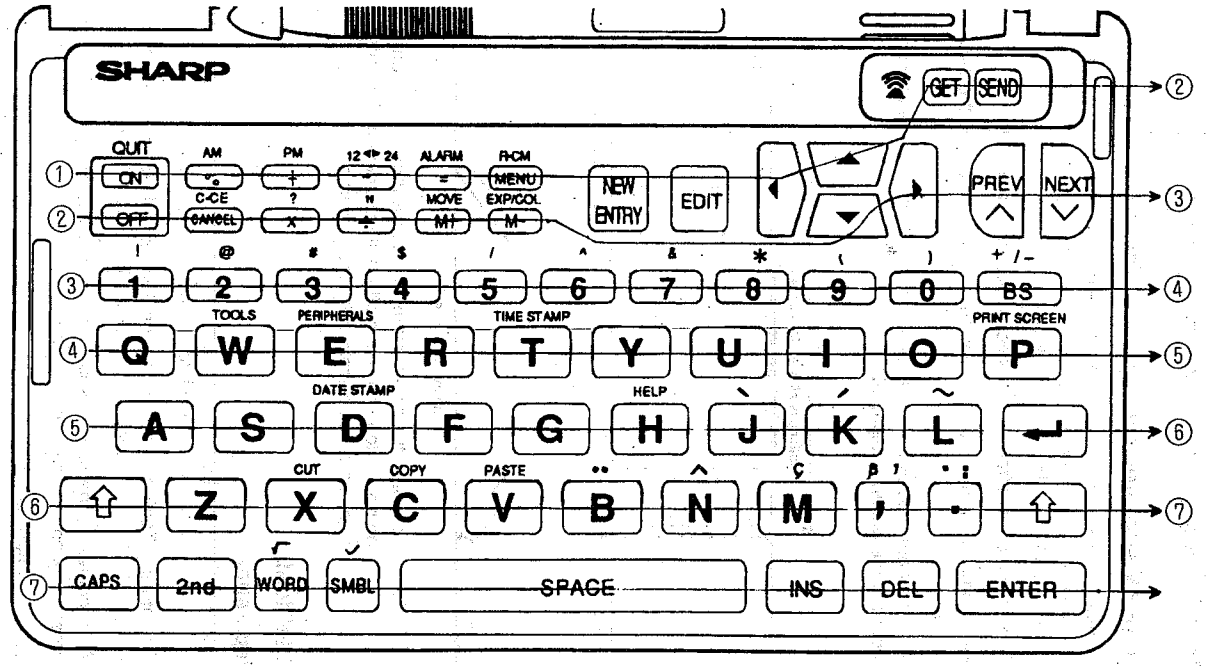
5. Explanation of diagnostics and check items

No.			
1.	While pressing ON and D keys, press RESET key. (After connecting the adapter.) Select "PRODUCTION CHECK (AFTER)" with "▼" key.	SELF CHECK PRODUCTION CHECK (AFTER) EE PROM DATA SET "▼" key → "PRODUCTION CHECK (AFTER)" is highlighted.	No void dot is permitted. Adjust the display intensity with the "^" or "v" key.
2.	Press ENTER key.	Outer frame display	• Must be free from incomplete display.
3.	Press ENTER key. (Patters 1)	Waddle-1 Waddle-2 Waddle-3 Waddle-4	• Pattern 1 must be free from incomplete display and blur.
4.	Press ENTER key. (Patters 2)		• Check the current for pattern 1. Display unit current: Max. 1mA OK NG
5.	Press ENTER key. (Patters 3)		
6.	Press ENTER key. (Patters 4)		
7.	Press the ENTER key (Rain drops)		• Must be free from blur (rain drop blur) under displayed lines.
8.	Press the ENTER key (Contrast).	Intensity of Waddle-1 must cross as shown in the figure. Darker Brighter Alarm Alarm Proceeds next after the alarm has activated. About 4 seconds in this duration.	• The display density changes as shown in the left hand figure.
9.	The display will change automatically.	LCD CHECK LCD REGISTER CHECK <<CHECK OK!!>> LCD register check	• Check that "CHECK OK" is displayed.

No.			
10.	Press the ENTER key. (ROM test) (RAM test) (EEPROM test)	ROM CHECK <<CHECK OK!!>> ← Displays for approx. 1 sec after 2 sec. The display is automatically cleared. RAM CHECK 256K BYTE RAM <<CHECK OK!!>> ← Displays for approx. 1 sec after 5 sec. The display is automatically cleared. EEPROM CHECK <<CHECK OK!!>> ← Displays for approx. 1 sec after 2 sec.	Check that no error display is given in the ROM check, RAM check, and EEPROM check. (In case of any error
	(Alarm test)	ALARM CHECK RTC RESISTER OK <<ALARM CHECK!!>> ↓ RTC RESISTER OK (Alarm sound generation) ALARM 1 OK <<ALARM CHECK!!>> RTC RESISTER OK (Alarm sound generation) ALARM 1 OK ALARM 2 OK <<CHECK OK!!> ↓ (To the next check (15-pin check) automatically.)	Check that "OK"is displayed in the RTC register check, the alarm 1 check, and the alarm 2 check. Check that an alarm sounds in alarm 1 and alarm 2 checks. In case of any error, to resume the check, press ENTER key.
		15pin CHECK 15pin checker Please connect!! (When the 15-pin has been already connected, the display is not given and the 15-pin check is started automatically.)	
11.	Connect 15-pin checker connector, and press ENTER key.	(Same as the above.) To scroll the screen, press ENTER key.	In the 15-pin check, the LED lights up. Check that the LED turns off after completion of checking.

No.			
	(15-pin check)	15pin CHECK <<CHECK ERROR>>	Check that no error display is given. In case of any error, press ENTER key.
12.	(Goes to the key check automatically.)	KEY CHECK ↓ KEY CHECK ******* ↓ KEY CHECK *****----***** *****---*** <<CHECK OK!!>>	Press the keys in the sequence shown in the separate sheet. If keys are erroneously pressed 5 times, it will result in NG.
			<<<ERROR!>>> Check that "ERROR COUNT UP!!" is not displayed.
13.	(Automatically)	Returns to the menu.	
14.	Press OFF key.	Display goes out.	
15.	Disconnect the AC adapter.		

Key press order



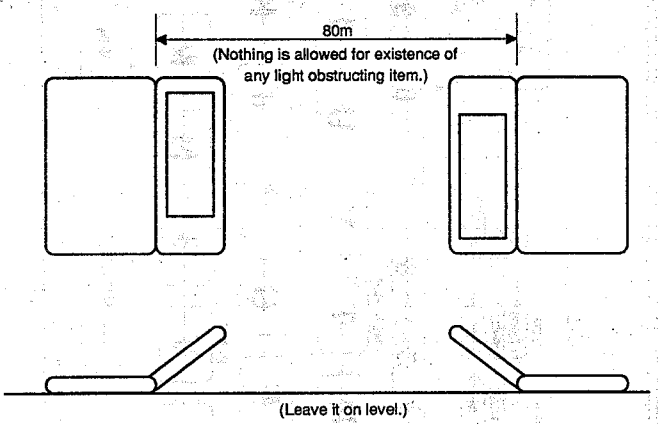
Optical communication test

Test equipment (6.4V supplied through the 2-pin jack)

- Use an OZ-9600II/IQ-9200 for the test equipment to test the optical communication.
- Operation for the test equipment is provided in the second screen of the diag menu. Select OPT-COM(M) on the tablet or the keyboard.
- Normally, leave the test equipment as it is on this item.
- To cancel the test equipment from the test, press the ON key.

Test (6.4V supplied through the 2-pin jack)

- To start, choose OPT-COM(S) from the diag menu (single screen) on the tablet or the keyboard.
  Make sure that <<CHECK OK>> is shown.
- To repeat the test after an error occurrence, press the Y key.
- After completion of the test, press the C key to return to the diag menu.
- See the figure below for the layout of the test equipment with regard to the tested equipment.



IMPORTANT: To abate the noise influence from a fluorescent light, do not try to turn on and off the fluorescent tube within a radius of 0.2m around the test location.

Tablet test

(Preparation)

1) Connect the AC adapter.
2) Turn the machine on and set it to the initialization menu.
3) Go into the TOOLS mode using the 2ND and TOOLS keys and select ADJUST LCD, then select ADJUST TOUCH PANEL.
4) As it comes to the screen shown in the Fig.1 in right, touch the cross mark counterclockwise with the pen.
5) Turn the machine off.

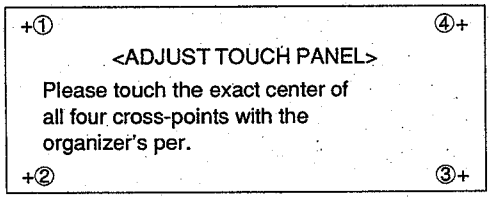


Fig. 1

(Linearity test)

1) Turn the machine on and select SCRAP BOOK.
2) Draw two lines ① and ② on the tablet as shown in the Fig.2.
3) Make sure at this instance that there is no void area in the line, no twist in a straight line, and no position deviation.

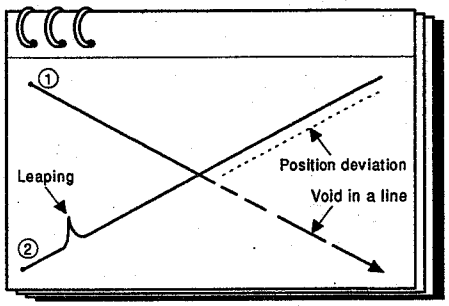


Fig. 2

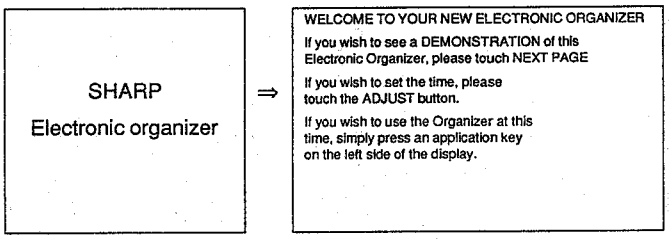
4) Turn off the power and disconnect the AC adapter.

Service switch reset test

① Confirm that the battery is loaded, then connect the AC adapter.

② While pressing the ON key and the S key, press the SERVICE TEST switch together with the RESET switch, then release the RESET switch only.

③ Make sure that the power is turned on normally.


SHARP
Electronic organizer
⇒
WELCOME TO YOUR NEW ELECTRONIC ORGANIZER
If you wish to see a DEMONSTRATION of this Electronic Organizer, please touch NEXT PAGE
If you wish to set the time, please touch the ADJUST button.
If you wish to use the Organizer at this time, simply press an application key on the left side of the display.

Switch tests

1. Card lock switch

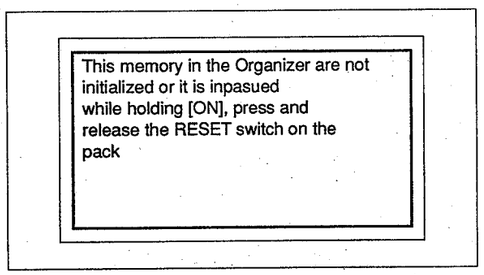
1) Reset the machine by pressing RESET switch on the back of the machine.
2) A data error message or initial message appears.
3) Move the card lock switch to the RELEASE side and make sure that the machine turns off.
4) In this occasion, press the ON key to make sure that the machine does not turn on.
5) Move the card lock switch to the LOCK side and make sure by pressing the ON key that the machine turns off.

2. Battery replacement switch

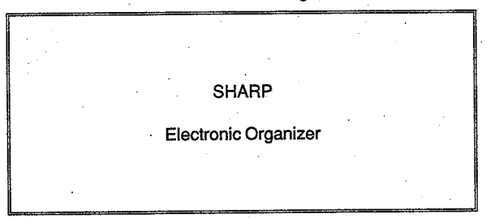
1) Reset the machine using the RESET switch on the back of the machine.
2) A data error or initial message appears.
3) Move the BATTERY REPLACE switch to and from.
4) Confirm that the display screen turns off then turns on.

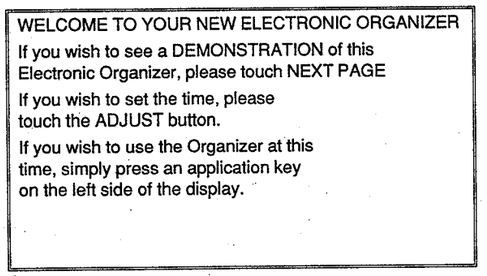
3. 2-pin jack

Perform the test using the 2-pin jack at least once an item to check the completed machine, and make sure that the machine can operate without any hazard without battery power. Ensure that it does not cause a low battery or fails to operate the machine.


This memory in the Organizer are not initialized or it is inpasued while holding [ON], press and release the RESET switch on the pack

Data error message



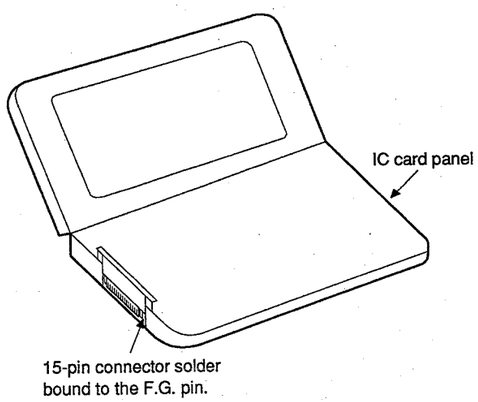

WELCOME TO YOUR NEW ELECTRONIC ORGANIZER
If you wish to see a DEMONSTRATION of this Electronic Organizer, please touch NEXT PAGE
If you wish to set the time, please touch the ADJUST button.
If you wish to use the Organizer at this time, simply press an application key on the left side of the display.

Initial screen

Continuity test

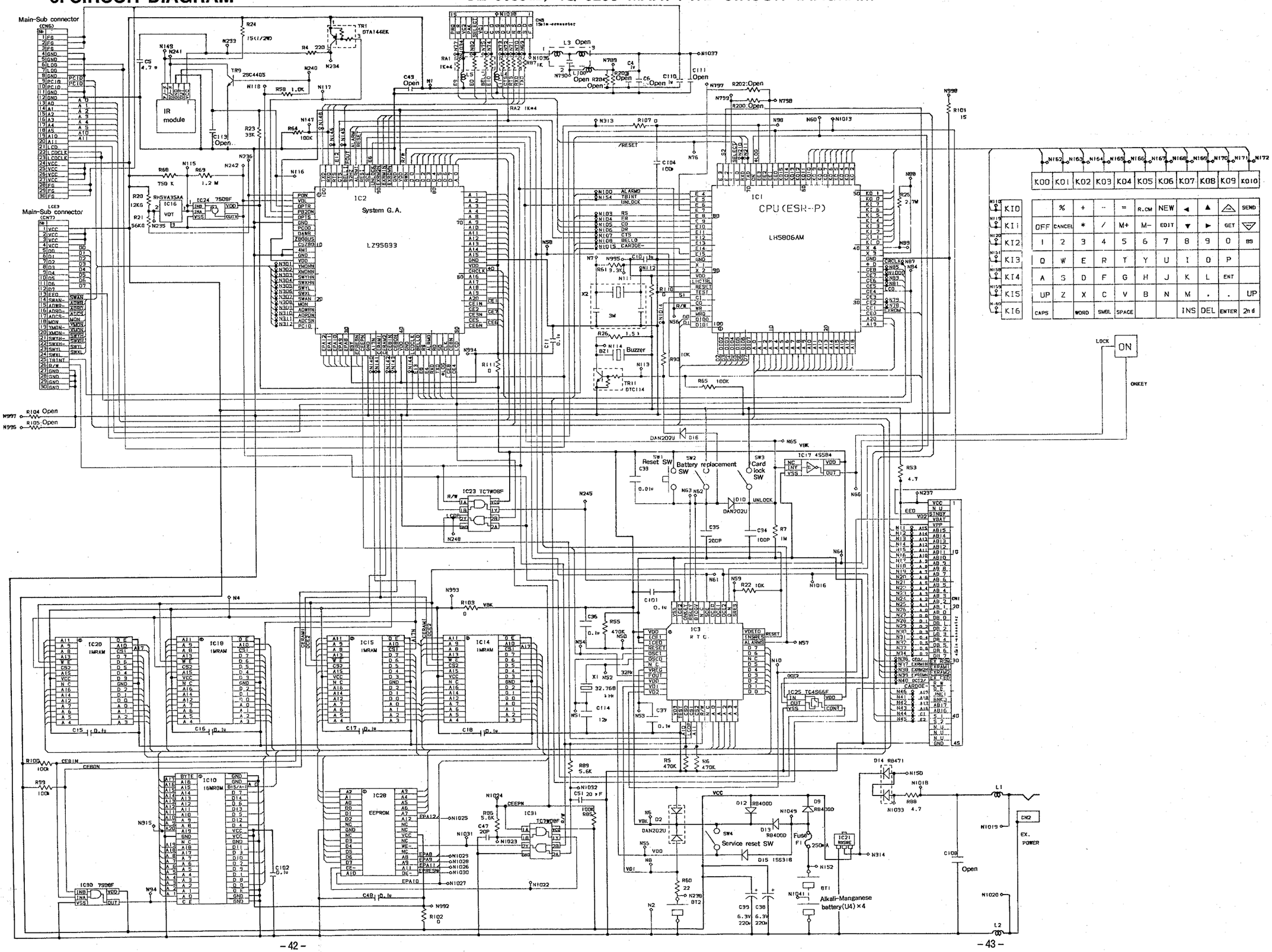
Test description

Resistance between the continuity test IC card panel and the 15-pin connector solder bound with the F.G. pin is not more than 150Ω.

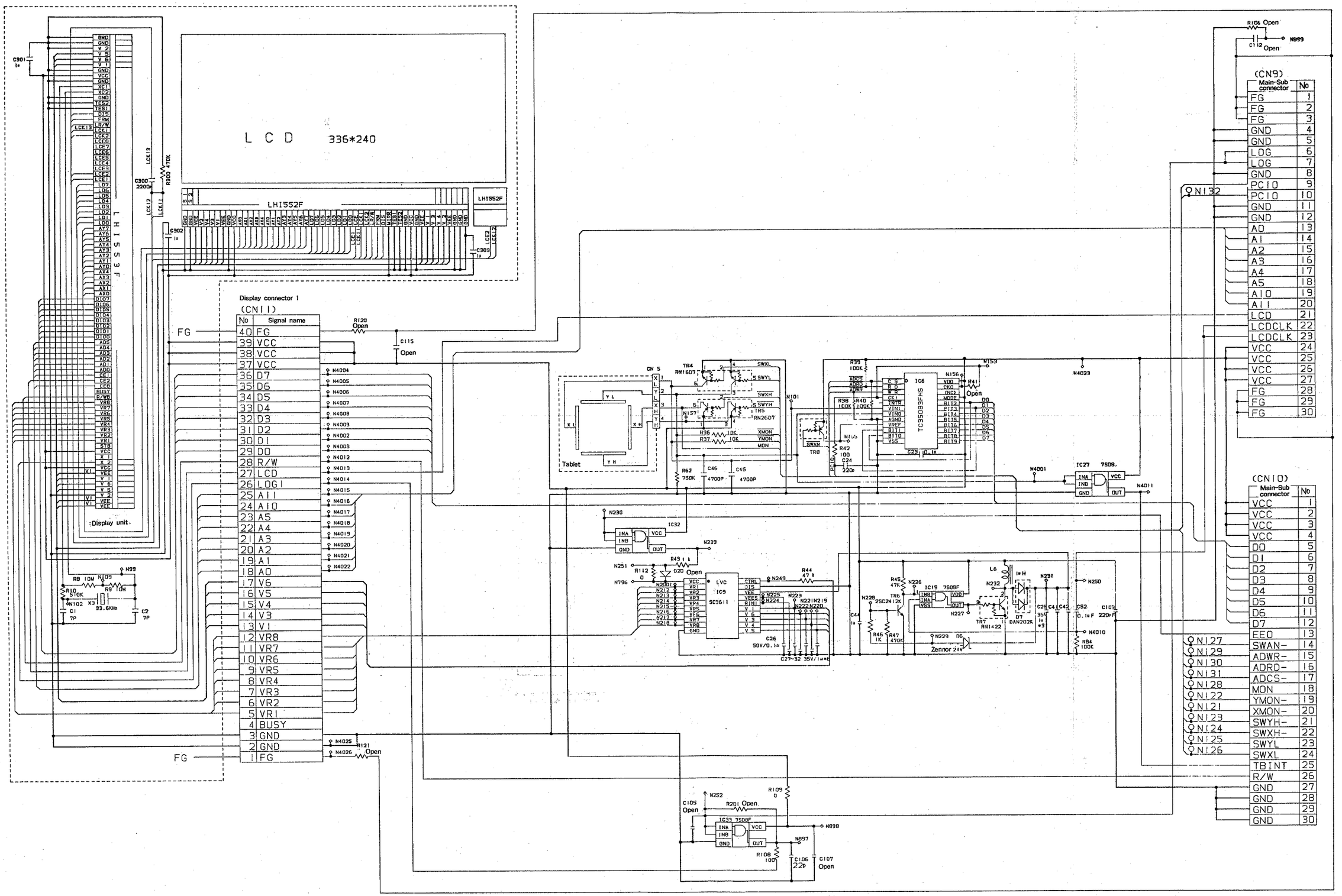


6. CIRCUIT DIAGRAM

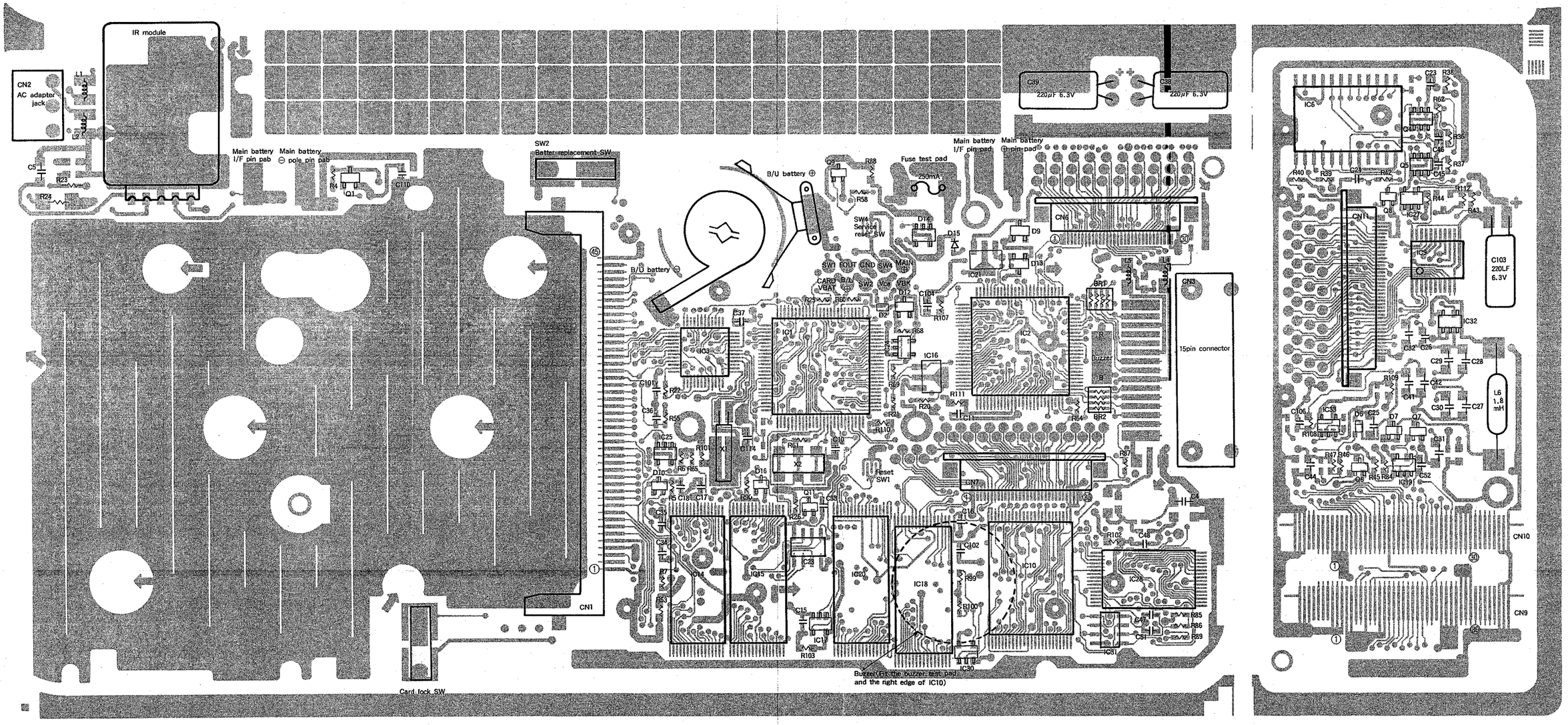
OZ-9600II／IQ-9200 MANI PWB CIRCUIT DIAGRAM



OZ-9600II／IQ-9200 SUB PWB CIRCUIT DIAGRAM



7. PARTS SIGNALS ARRANGEMENT

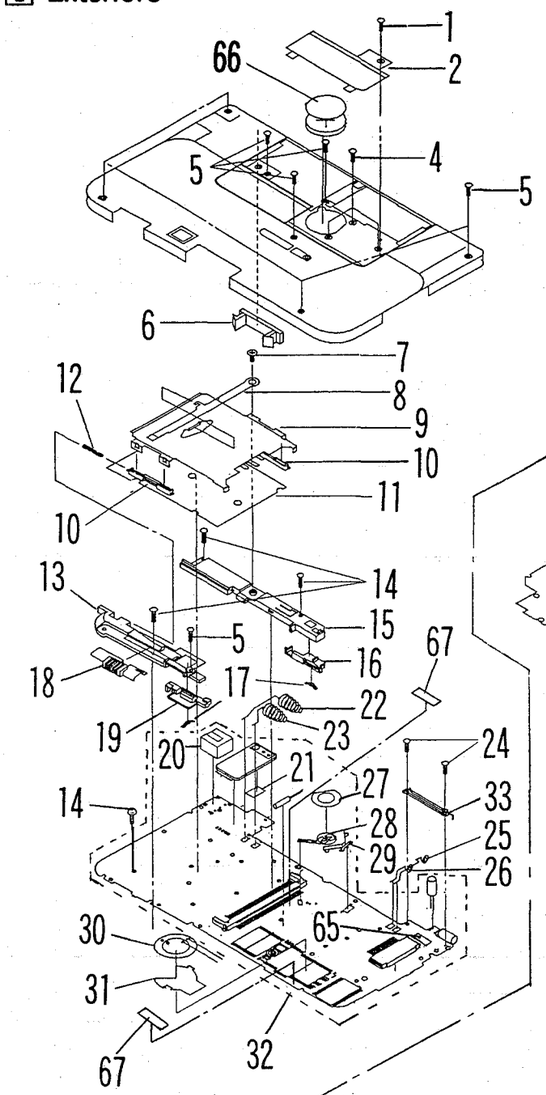


8. PARTS LIST & GUIDE

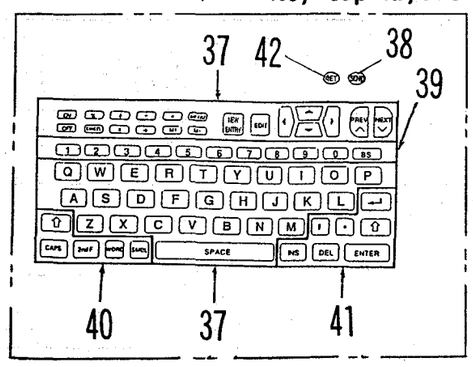
1 Exteriors

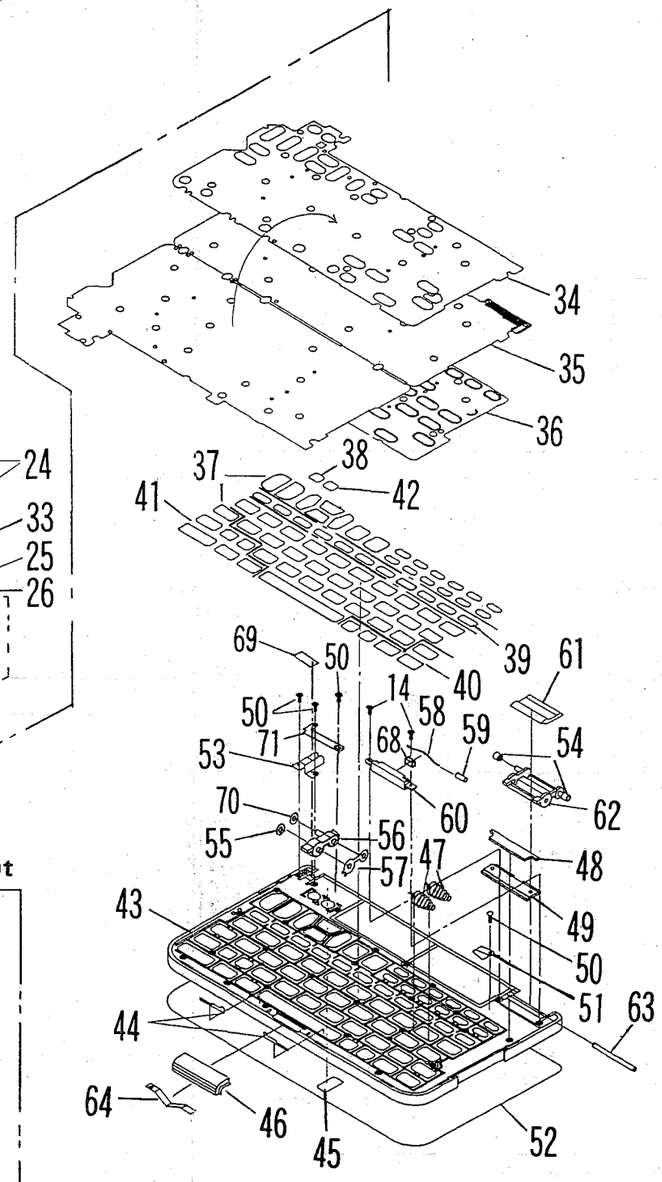
NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	OZ 9600	IQ 9200
1	LX-BZ1299CCZZ	AA		C	Screw	○	○
2	GFTAB1002PCZZ	AE		D	Battery lid(Small)	○	○
4	LX-BZ1280CCZZ	AA		C	Screw	○	○
5	LX-BZ1003PCZZ	AA		C	Screw (M1.7 L=5.6)	○	○
6	PFiLW1001PCA1	AD		C	IR filter	○	○
7	LX-BZ1005PCZZ	AA		C	Screw (M2 L=3.5)	○	○
8	MLEVF1001PCZZ	AD		C	Card take out lever	○	○
9	GiTA-1001PCZZ	AD		C	Slide plate	○	○
10	MSLiP1053CCZ1	AC		C	Card slider	○	○
11	PSHEZ1017PCZZ	AD		C	PWB blind sheet	○	○
12	MSPRC1011PCZZ	AB		C	Slide return spring	○	○
13	LHLDZ1003PCZZ	AD		C	Card holder A	○	○
14	LX-BZ1004PCZZ	AA		C	Screw (M1.7 L=4.8)	○	○
15	LHLDZ1004PCA1	AD		C	Card holder B	○	○
16	JKNBZ1008PCZZ	AD		C	Battery change switch	○	○
17	QCNTM1056CC02	AB		C	Contact	○	○
18	MSLiP1001PCZZ	AC		C	Card take out slider	○	○
19	JKNBZ1010PCZZ	AD		C	Card lock knob	○	○
20	QJAKE1001PCZZ	AE		C	Adaptor jack	○	○
21	PTPEH1021PCZZ	AA		D	Noise tape	○	○
22	QTANB1008PC01	AC		C	Battery terminal A ⊖	○	○
23	QTANB1009PC01	AC		C	Battery terminal B ⊖	○	○
24	LX-BZ1001PCZZ	AA		C	Screw (M2 L=3.5)	○	○
25	QTANB1006PCZZ	AB		C	Battery terminal A ⊕	○	○
26	QTANB1007PCZZ	AB		C	Battery terminal B ⊕	○	○
27	PZETL1001PCZZ	AB		C	Insulation sheet(for battery terminal)	○	○
28	QTANZ1583CC07	AB		C	Battery terminal ⊖	○	○
29	QTANZ1598CCZZ	AB		C	Battery terminal ⊕	○	○
30	RALMB1030CCZZ	AD		B	Buzzer (EFB-S49C02P)	○	○
31	PSPAV1012PCZZ	AC		C	Buzzer spacer	○	○
32	DUNTK1304PCZS	CF	N	E	Main PWB unit	○	○
33	LANGK1004PCZZ	AB		C	Key angle B	○	○
34	PSPAP1004PCZZ	AC		C	Key spacer	○	○
35	QPWBH1011PCZA	AP		C	Key sheet	○	○
36	PGUMM1001PCZZ	AM		C	Key rubber	○	○
37	JKNBZ1001PCZZ	AM		C	Key top A	○	○
38	JKNBZ1006PCZZ	AB		C	Key top F (SEND)	○	○
39	JKNBZ1003PCZZ	AF		C	Key top C	○	○
40	JKNBZ1004PCZZ	AF		C	Key top D	○	○
41	JKNBZ1005PCZZ	AF		C	Key top E	○	○
42	JKNBZ1007PCZZ	AC		C	Key top G (GET)	○	○
43	GCABB1002PCZZ	AK		D	Key cabinet B	○	○
44	MSPRP1002PCZZ	AB		C	Lid lock spring	○	○
45	PSHEZ1005PCZZ	AB		C	Pen blind sheet	○	○
46	JKNBZ1009PCZZ	AC		C	Lid lock knob	○	○
47	QTANB1010PC01	AB		C	Battery terminal (relay)	○	○
48	PGUMM1004PCZZ	AB		C	Key rubber	○	○
49	LANGK1003PCZZ	AD		C	Key angle A	○	○
50	LX-BZ1002PCZZ	AA		C	Screw (M1.7 L=3.4)	○	○
51	MSPRP1004PCZZ	AD		C	Pen lock spring	○	○
52	PSHEZ1001PCZ3	AQ	N	C	Key display sheet	○	
	PSHEZ1001PCZ4	AQ	N	C	Key display sheet [except U.Kingdom]		○
	PSHEZ1001PCZ5	AQ	N	C	Key display sheet [U.Kingdom]		○
53	LFiX-1001PCZZ	AC		C	Hinge fixing plate	○	○
54	PGUMM1005PCZZ	AA		C	Hinge rubber	○	○
55	PSPAP1020PCZZ	AB		C	Spacer for hinge(small)	○	○
56	MJNTP1003PCZ1	AC		C	Hinge(small)	○	○
57	PTPEH1031PCZZ	AB		D	Shield tape for hinge(small)		○
58	MSPRC1003PCZZ	AB		C	Hinge spring	○	○
59	NRÖLM1001PCZZ	AE		C	Hinge roller	○	○
60	LHLDZ1002PCZZ	AD		C	Hinge spring holder	○	○
61	MJNTP1002PCZZ	AC		C	Hinge B(large)	○	○
62	MJNTP1001PCA1	AE	N	C	Hinge A(large)	○	○
63	NJiK-1001PCZZ	AB		C	Hinge shaft	○	○
64	MSPRP1010PCZZ	AC		C	Pop-up spring	○	○
65	PTPEH1013PCZZ	AA		D	PET B fixing tape	○	○
66	PSPAP1404CCZZ	AA		C	Spacer(for back up battery)	○	○
67	PZETL1018PCZZ	AA		C	Insulation sheet	○	○
68	PCUSG1007PCZZ	AA		C	Rubber cushion	○	○
69	PTPEH1030PCZZ	AA		D	Shield tape(for key cabinet)		○
70	PSPAP1022PCZZ	AA		C	Spacer B for hinge(small)		○
71	PSLDC1009PCZZ	AD		C	Earth ring		○

1 Exteriors



Key top layout





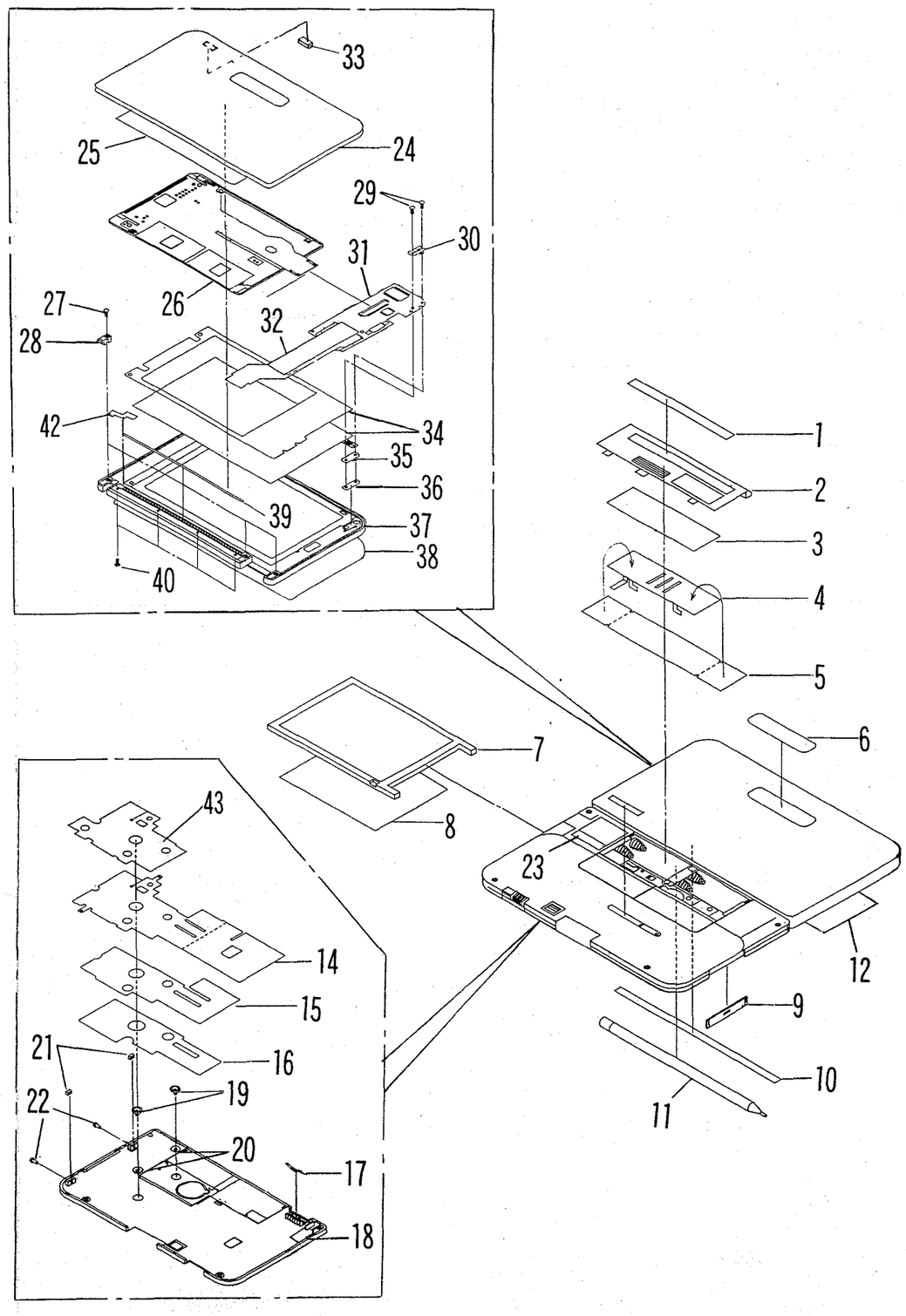
2 Bottom cabinet etc.

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	OZ 9600	IQ 9200
1	TLABM1046PCZZ	AC	N	D	Name plate label	○	
	TLABM1047PCZZ	AC	N	D	Name plate label		○
2	GFTAB1001PCZZ	AF		D	Battery lid(large)	○	○
3	TLABZ1004PC01	AC		D	Battery change label	○	○
4	LFiX-1002PCZZ	AC		C	Battery fixing plate	○	○
5	PZETL1004PCZZ	AB		C	Insulation sheet(for battery)	○	○
6	HBDGD1001PCZ3	AD	N	D	Model badge	○	
	HBDGD1001PCZ4	AD	N	D	Model badge [except U.Kingdom]		○
	HBDGD1001PCZ2	AD		D	Model badge [U.Kingdom]		○
7	GiTA-1047CCA1	AC		C	Dummy card	○	○
8	TLABZ1048PCZZ	AC		D	Dummy card label A	○	○
9	GFTAA1003PCZZ	AD		D	Connector lid (15pin)	○	○
10	PSHEZ1004PCZZ	AB		C	Blind sheer	○	○
11	CPENP1001PCN1	AG		D	Pen unit	○	○
12	PSHEZ1018PC03	AD		C	LCD sheet	○	○
14	PSLDC1004PC01	AE	N	C	Electrostatic sheet	○	○
15	LANGK1019PCZZ	AE		C	Reinforce angle	○	○
16	PTPEH1022PCZZ	AC		D	Fixing tape	○	○
17	CANGK1020PC01	AF		C	IR filter angle	○	○
18	GCABA1001PCA1	AR		D	Key cabinet A	○	○
19	PGUMM1002PCZZ	AB		C	Reset rubber	○	○
20	PSPAP1013PCZZ	AB		C	Reset spacer	○	○
21	LX-NZ1001PCZZ	AB		C	Nut	○	○
22	PGUMM1691CCZZ	AA		C	Rubber cap	○	○
23	TLABS1017PCZZ	AB		D	FCC ID label	○	
24	GCABA1003PCA1	AQ		D	Display cabinet A	○	○
25	LPLTZ1001PCA1	AK	N	C	LCD reinforce plate	○	○
26	DUNT-1030PCZZ	CD		E	LCD unit	○	○
27	LX-BZ1003PCZZ	AA		C	Screw (M1.7 L=5.6)	○	○
28	LHLDZ1008PCZZ	AB		C	Hinge holding holder A	○	○
29	LX-BZ1001PCZZ	AA		C	Screw (M2 L=3.5)	○	○
30	LANGK1002PCZZ	AB		C	Tablet angle B	○	○
31	DUNTK1305PCZS	BR	N	E	Sub PWB unit	○	○
32	PTPEH1003PCZZ	AC		D	PET holding tape	○	○
33	PCUSS1005PCZZ	AA		C	LCD cushion	○	○
34	DUNT-1276PCZZ	BM	N	E	Tablet unit	○	
	DUNT-1471PCZZ	BM	N	E	Tablet unit		○
35	PGUMM1003PCZZ	AB		C	Tablet rubber	○	○
36	LANGK1001PCZZ	AC		C	Tablet angle A	○	○
37	GCABB1004PCA1	AG		D	Display cabinet B	○	○
38	HDECP1005PCZ3	AP	N	D	Display deco.panel	○	
	HDECP1005PCZZ	AP		D	Display deco.panel		○
39	LANGF1010PCZZ	AF		C	Reinforce rod	○	○
40	LX-BZ1002PCZZ	AA		C	Screw (M1.7 L=3.4)	○	○
42	PTPEH1027PCZZ	AB		D	Shield tape		○
43	PZETL1023PCZZ	AC	N	C	Insulation sheet C(for key cabinet)	○	○

3 Packing material & Accessories

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	OZ 9600	IQ 9200
1	TiNSE1047PCZZ	AQ	N	D	Instruction book	○	
	TiNSF1054PCZZ	AU	N	D	Instruction book [Canada]		○
	TiNSE1048PCZZ	AU	N	D	Instruction book		○
2	SPAK-548ECCZZ	AB		D	Vinyl bag	○	○
3	SPAK-839ECCZZ	AA		D	Vinyl bag	○	○
4	SPAKA1046PCZZ	AC		D	Packing cushion for set	○	○
5	SPAKA1047PCZZ	AC		D	Packing cushion for battery [except Canada]	○	○
	SPAKA1129PCZZ	AC	N	D	Packing cushion for battery [Canada]		○
6	SPAKC1172PCZZ	AF	N	D	Packing case	○	
	SPAKC1175PCZZ	AG	N	D	Packing case [Other countries]		○
	SPAKC1178PCZZ	AG	N	D	Packing case [U.Kingdom]		○
	SPAKC1190PCZZ	AF	N	D	Packing case [Canada]		○
8	TCADZ2003CCZZ	AB		D	Name plate request card	○	
9	TGANE1113CCN1	AB		D	Guaranty [Australia]		○
	TGANE1002CS01	AA		D	Guaranty [Canada]		○
10	TCADZ1005PCZZ	AC		D	Available list [Canada]		○
11	TCADZ1019PCZZ	AB		D	Battery change label	○	○
12	TCADZ1021PCZZ	AB		D	Accessory guide sheet	○	

2 Bottom cabinet etc.



4 Main PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	OZ 9600	IQ 9200
1	PSHEZ1017PCZZ	AD		C	PWB blind sheet	○	○
2	PSPAV1012PCZZ	AC		C	Buzzer spacer	○	○
3	PTPEH1013PCZZ	AA		D	PET B fixing tape	○	○
4	PTPEH1021PCZZ	AA		D	Noise tape	○	○
5	PTPEH1029PCZZ	AB		D	Tape	○	○
6	PZETL1001PCZZ	AB		C	Insulation sheet(for battery terminal)	○	○
7	PZETL1018PCZZ	AA		C	Insulation sheet	○	○
8	QCNCM1001PCZZ	AR		C	Connector (45pin) [CN1]	○	○
9	QCNCW1003PCZZ	AG		C	Connector (30pin) [CN6,7]	○	○
10	QCNCW1368CC1E	AM		C	Connector (15pin) [CN3]	○	○
⚠ 11	QFS-T1001PCZZ	AG		A	Fuse (250mA) [F1]	○	○
12	QJAKE1001PCZZ	AE		C	Adaptor jack	○	○
13	QTANZ1583CC07	AB		C	Battery terminal ⊖	○	○
14	QTANZ1598CCZZ	AB		C	Battery terminal ⊕	○	○
15	RALMB1030CCZZ	AD		B	Buzzer (EFB-S49C02P) [BZ1]	○	○
16	RC-CZ1093CCZZ	AB		C	Capacitor (1μF) [C10,110]	○	○
17	RC-TZ1001PCZZ	AE		C	Capacitor (16WV 4.7μF) [C5]	○	○
18	RCiLZ1010PCZZ	AD		C	Coil [L1,2]	○	○
19	RCiLZ1044CCZZ	AC		C	Inductor (NZ3216A501B01) [L4,5]	○	○
20	RCRM-1026CCZZ	AF		B	Crystal (3.072MWS) [X2]	○	○
21	RCRSP1003PCZZ	AE		B	Crystal (32.768KHz) [X1]	○	○
22	RH-DZ1001ECZZ	AD		B	Diode (1SR148) [D9,12,13]	○	○
23	RH-DZ1013CCZZ	AE		B	Diode (RB471) [D14]	○	○
24	RR-SZ1002CCZZ	AB		C	Resistor (1/2W 15Ω) [R24]	○	○
25	RR-TZ1006CCZZ	AB		B	Block resistor (1KΩ×4) [BR1,2]	○	○
26	RUNTZ1000CCZZ	BA		B	Optical communication module	○	○
27	VCCCCY1HH101J	AA		C	Capacitor (50WV 100PF) [C34]	○	○
28	VCCCCY1HH201J	AA		C	Capacitor (50WV 200pF) [C35]	○	○
29	VCCCTV1HH101J	AA		C	Capacitor (50WV 100PF) [C104]	○	○
30	VCCCTV1HH120J	AA		C	Capacitor (50WV 12pF) [C114]	○	○
31	VCEAZU0JW227M	AB		C	Capacitor (6.3WV 220μF) [C38,39]	○	○
32	VCKYCY1EF103Z	AA		C	Capacitor (25WV 0.010μF) [C33]	○	○
33	VCKYCY1EF104Z	AA		C	Capacitor (25WV 0.10μF) [C11,15,16,17,18,36,37,48,101,102]	○	○
34	VCKYTQ1EF105Z	AB		C	Capacitor (25WV 1.0μF) [C4]	○	○
35	VHDDAN202U/-1	AB		B	Diode (DAN202U) [D2,10,16]	○	○
36	VHD1SS318//-1	AB		B	Diode (1SS318) [D15]	○	○
37	VHiLH537AB8-1	BD	N	B	IC (LH537AB8) [IC10]	○	○
41	VHiLH58061M-1	AZ		B	IC (LH58061M) [IC1]	○	○
42	VHiLZ95G33/-1	AY		B	IC (LZ95G33) [IC2]	○	○
43	VHiM51008AVPL	BF		B	IC (M51008AVPL) [IC14,15,18,20]	○	○
44	VHiRH5RE58AA1	AF		B	IC (RH5RE58AA1) [IC21]	○	○
45	VHiRH5VA35AA1	AE		B	IC (RH5VA35AA1) [IC16]	○	○
46	VHiSMC5245FVA	AT		B	IC (SMC5245FVA) [IC3]	○	○
47	VHiTC4S584TPR	AE		B	IC (TC4S584TPR) [IC17]	○	○
48	VHiTC4S66FTPR	AC		B	IC (TC4S66FTPR) [IC25]	○	○
49	VHiTC7S08F/-1	AC		B	IC (TC7S08) [IC24,30]	○	○
50	VHiTC7W08F/-1	AD		B	IC (TC7W08F) [IC23,31]	○	○
51	VRS-CY1JD102J	AA		C	Resistor (0.063W 1.0KΩ ±5%) [R58,87]	○	○
52	VRS-CY1JD103J	AA		C	Resistor (0.063W 10KΩ ±5%) [R22,90]	○	○
53	VRS-CY1JD104J	AA		C	Resistor (0.063W 100KΩ ±5%) [R64,65,84,99,100]	○	○
54	VRS-CY1JD105J	AA		C	Resistor (1/16W 1.0MΩ ±5%) [R7]	○	○
55	VRS-CY1JD123G	AA		C	Resistor (1/16W 12KΩ ±2%) [R20]	○	○
56	VRS-CY1JD125J	AA		C	Resistor (0.063W 1.2MΩ ±5%) [R69]	○	○
57	VRS-CY1JD150J	AA		C	Resistor (0.063W 15Ω ±5%) [R101]	○	○
58	VRS-CY1JD152J	AA		C	Resistor (0.063W 1.5KΩ ±5%) [R26]	○	○
59	VRS-CY1JD220J	AA		C	Resistor (1/16W 22Ω ±5%) [R60]	○	○
60	VRS-CY1JD221J	AA		C	Resistor (0.063W 220Ω ±5%) [R4]	○	○
61	VRS-CY1JD275J	AA		C	Resistor (1/16W 2.7MΩ ±5%) [R25]	○	○
62	VRS-CY1JD332J	AA		C	Resistor (1/16W 3.3KΩ ±5%) [R61]	○	○
63	VRS-CY1JD333J	AA		C	Resistor (1/16W 33KΩ ±5%) [R23]	○	○
64	VRS-CY1JD474J	AA		C	Resistor (1/16W 470KΩ ±5%) [R5,6,55]	○	○
65	VRS-CY1JD563G	AA		C	Resistor (0.063W 56KΩ ±2%) [R21]	○	○
66	VRS-CY1JD754J	AA		C	Resistor (0.063W 750KΩ ±5%) [R68]	○	○
67	VRS-TP2BD101J	AA		C	Resistor (1/8W 100Ω ±5%) [R113]	○	○
68	VRS-TS2AD000J	AA		C	Resistor (1/10W 0Ω ±5%) [R102,103,107,110,111]	○	○
69	VRS-TS2AD4R7J	AA		C	Resistor (1/10W 4.7Ω ±5%) [R53,88]	○	○
70	VSDTA144EK/-1	AC		B	Transistor (DTA144EK) [Q1]	○	○
71	VSDTC114EU/-1	AB		B	Transistor (DTC114EU) [Q11]	○	○
72	VS2SC4405-/-1	AD		B	Transistor (2SC4405) [Q9]	○	○
	(Unit)						
901	DUNTK1304PCZS	CF	N	E	Main PWB unit	○	○

5 Sub PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	OZ 9600	IQ 9200
1	QCNCW1002PCZZ	AK		C	Connector (40pin) [CN11]	○	○

[redacted]
OZ-9600 II
IQ-9200

5 Sub PWB unit

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION		OZ 9600	IQ 9200
2	RC-CZ1093CCZZ	AB		C	Capacitor (1μF)	[C44]	○	○
3	RC-CZ1094CCZZ	AB		C	Capacitor (25WV 1.0μF)	[C25,27,28,29,30,31,32,41,42]	○	○
4	RCiLZ1001PCZZ	AE		C	Coil (1.8mH)	[L6]	○	○
5	VCCCCY1HH220J	AA		C	Capacitor (50WV 22PF)	[C106]	○	○
6	VCCCCY1HH221J	AA	N	C	Capacitor (50WV 220PF)	[C24]	○	○
7	VCEAZU0JW227M	AB		C	Capacitor (6.3WV 220μF)	[C103]	○	○
8	VCKYCY1EF104Z	AA		C	Capacitor (25WV 0.10μF)	[C23]	○	○
9	VCKYCY1EF472Z	AA		C	Capacitor (25WV 4700PF)	[C45,46]	○	○
10	VCKYTV1EF154Z	AA		C	Capacitor (25WV 0.15μF)	[C52]	○	○
11	VCKYTV1HF104Z	AA		C	Capacitor (50WV 0.10μF)	[C26]	○	○
12	VHDDAN202K/-1	AB		B	Diode (DAN202K)	[D7]	○	○
13	VHEDTZ27C//-1	AC		B	Zener diode (DTZ27C)	[D6]	○	○
14	VHiSC3611//-1	AR		B	IC (SC3611)	[IC9]	○	○
15	VHiTC35083F-1	AY		B	IC (TC35083F)	[IC6]	○	○
16	VHiTC7S08F/-1	AC		B	IC (TC7S08)	[IC19,27,32,33]	○	○
17	VRS-CY1JD000J	AA		C	Resistor (0.063W 0Ω ±5%)	[R112]	○	○
18	VRS-CY1JD101J	AA		C	Resistor (0.063W 100Ω ±5%)	[R42]	○	○
19	VRS-CY1JD102J	AA		C	Resistor (0.063W 1.0KΩ ±5%)	[R43,46]	○	○
20	VRS-CY1JD103J	AA		C	Resistor (0.063W 10KΩ ±5%)	[R36,37]	○	○
21	VRS-CY1JD104J	AA		C	Resistor (0.063W 100KΩ ±5%)	[R38,39,40,84]	○	○
22	VRS-CY1JD473J	AA		C	Resistor (0.063W 47KΩ ±5%)	[R44,45]	○	○
23	VRS-CY1JD474J	AA		C	Resistor (1/16W 470KΩ ±5%)	[R47]	○	○
24	VRS-CY1JD754J	AA		C	Resistor (0.063W 750KΩ ±5%)	[R62]	○	○
25	VRS-TS2AD000J	AA		C	Resistor (1/10W 0Ω ±5%)	[R109]	○	○
26	VRS-TS2AD101J	AA		C	Resistor (1/10W 100Ω ±5%)	[R108]	○	○
27	VSDTA114EU/-1	AC		B	Transistor (DTA114EU)	[Q8]	○	○
28	VSRN1422-//-1	AD		B	Transistor (RN1422)	[Q7]	○	○
29	VSRN1607-//-1	AB		B	Transistor (RN1607)	[Q4]	○	○
30	VSRN2607-//-1	AA		B	Transistor (RN2607)	[Q5]	○	○
31	VS2SC2412K/-1	AB		B	Transistor (2SC2412K)	[Q6]	○	○
32	PTPEH1003PCZZ	AC		D	PET holding tape		○	○
	(Unit)							
901	DUNTK1305PCZS	BR	N	E	Sub PWB unit		○	○

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